





Animal Keepers' Forum

July 1991

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Dedicated to Professional Animal Care

ANIMAL KEEPERS' FORUM, 635 Gage Blvd., Topeka, KS 66606

Editor-in-Chief: Susan Chan
Assistant Editor: Ron Ringer

July 1991
Volume Eighteen
Number Seven

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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*This month's cover features Mike Dulaney, an Area Supervisor of the Nocturnal House at the Cincinnati Zoo & Botanical Gardens, in the company of an Aardvark (*Orycteropus afer*). Mike is in charge of research and breeding programs for small mammals, especially small carnivores such as the Binturong (*Arctictis binturong*) and small primates like the Tarsier (*Tarsius spectrum*). The cover was drawn by one of AKF's regular artistic contributors, Yoshi. Yonetani from the Zoo Design & Education Lab in Kobe, Japan. Thanks, Yoshi!*

Scoops and Scuttlebutt

Note to Membership on 1991 Conference Proceedings

At the mid-year Board of Directors meeting in April, some decisions were made concerning how AAZK will publish its Conference Proceedings from the 1991 Toledo Conference. While the format of last year's proceedings was well-received, very few members beyond those attending the New Orleans Conference ordered the publication. Also the proceedings cost built into the registration fee did not end up being adequate to cover the actual costs of the publication. Therefore, in order to make publishing the proceedings more economically feasible for AAZK and still make the material available to those members wishing to receive them, the following will be done in 1991:

1. The Proceedings from the Toledo Conference will be duplicated using high quality photocopy equipment rather than printed at a traditional print shop. Therefore, all authors submitting papers for publication will be required to follow exactly the criteria for paper submission which has been sent to them (i.e. an author's paper will be printed exactly as it is submitted.)
2. The Toledo Conference takes place in October. All papers to be included in the Proceedings will be collected at the conference. Advertisements listing the papers to be included in the 1991 Proceedings as well as pricing information and an order form will be published in the November and December issues of AKF. This ad will be the only way individuals may order the Proceedings.
3. The Conference Proceedings will be published in January and sent to all those who ordered from the ads in November and December. As in the past, those presenting papers will receive a copy gratis. However, since no publication fee has been built into this year's registration fee, delegates will also need to order a copy of the Proceedings if they wish to have one.
4. After the initial printing of the complete Proceedings in January, we will only offer the papers on an individual basis to those wishing to order them. There will be a flat fee charge for each paper ordered. Individuals may then order one or several papers depending on their area of interest. Advertisement of the papers' availability will be published in AKF.

Note on AKF Reader Survey

We had originally planned to have the first part of the survey response in this issue of the journal. Because of the large amount of material to be included in this issue, we have postponed the first portion of the survey analysis (statistical) until the August issue. The second portion of the analysis dealing with suggestions and comments from survey respondents will appear in the September issue. We have also been having a few more surveys trickle in since the deadline and this will allow us to include the data from them as well.

Racetrack Trash Brings Rain Forest Cash - AGAIN!

--submitted by Eric and Rosemary Krussman

AAZK Chapters at The National Aquarium in Baltimore, the National Zoo and the Baltimore Zoo joined forces again this year following the running of the Preakness on 18 May for the 2nd Annual Pimlico Clean-up to collect the trash on the infield at the racetrack. About 150 volunteers from these facilities cleared the field of spectator trash including 12,500 pounds of aluminum (the equivalent of 300,000 cans) for recycling. The combined Chapter efforts earned \$8294.95 from three sources: the contract fee paid by the racetrack maintenance company, the recycling of the aluminum cans and corporate support from Budweiser.

Monies raised by the Pimlico Racetrack Clean-up Project are designated for the preservation of endangered rain forest habitats through the Ecosystem Survival Plan's (ESP) Adopt-an-Acre Program.

(In other good conservation news, Rosemary reported that the Conservation Parking Meter installed at the National Aquarium in Baltimore on 4 April 1991 has thus far generated nearly \$10,000 in contributions for the ESP Program. Rosemary is the local ESP Coordinator for the area.)

PRIMATE-TALK - A Discussion Forum for Primatology

The Wisconsin Regional Primate Research Center (WRPRC) at the University of Wisconsin, Madison, WI, is pleased to announce the availability of a new electronic mail listserver called PRIMATE-TALK. PRIMATE-TALK is an open forum for the discussion of primatology and related subjects. This forum is open to electronic mail users worldwide with an interest in primatology. Subject matter may include, but is not limited to: news items, meeting announcements, research issues, information requests, veterinary/husbandry topics, job notices, animal exchange information and book reviews.

People with Internet, BITNET or UUCP addresses can communicate with PRIMATE-TALK. Users of other networks should contact WRPRC. If you are interested in joining PRIMATE-TALK, send a message to PRIMATE-TALK REQUEST @ PRIMATE. WISC. EDU stating that you would like to sign on. If you have questions about electronic access to the list, you may call Larry Jacobsen, Head of Library Services at the WRPRC Library at (608) 263-3512, or FAX at (608) 263-4031. You may also write to the WRPRC Library, 1220 Capitol Court, Madison, WI 53715-1299, USA.

AAZK Announces New Professional/Contributing Members

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Maria Lawson, Columbian Prk Zoo (IN)
Laura Debnar, no zoo listed (IL)
Jemima Bolt, Los Angeles Zoo (CA)
Tim Los Banos, Honolulu Zoo (HI)
Jane Muller, Metro Toronto Zoo (Ont.)

Renewing Contributing Members

International Society for Endangered Cats, Inc., Columbus, OH
Ngare Sergoi Support Group, Inc., Columbus, OH



From the Associate Editor

You know, titles are a wonderful thing. They can mean a lot to a person like myself. Example: Ron Ringer, Associate Editor, AKE. Sounds like I know a lot about the print game, huh? Well folks, I must confess that if it were not for the wonderful job that Susan does each month and the addition of the computer a couple of years ago, people would know very quickly that the words editor and Ron Ringer are contradictions in terms. Now this is not to say that I didn't assist Susan in her work. I did. Every year we would sit down and pick awards for the best articles that appeared in the AKE. I also assisted in answering letters and correspondence. The problem I have is that I can burn out a "Spell Checker" on a computer in about a week, punctuation was always a way to make articles look pretty, ; ; " Iand I pronounce words the way they should be pronounced, my way! Luckily Susan was always there with her expertise to catch all the mistakes that I would let go by.

Now the reason I am bearing my soul to you is that I want to thank Susan and the rest of the Board for allowing someone of my limited ability to experience what it's like to be part of a professional publication. I mean I should be able to get quite a bit of mileage out of using the fact that I was Associate Editor of AKE and I appreciate the opportunity very much. This is just my way of setting the record straight and letting people know that anyone can achieve their goals in life if you have someone like Susan Chan and a good computer to cover your butt.

It is with great sadness that I say good-bye to the staff of AKE and AO. I have accepted a job in San Diego to work in their zoo's elephant program. I will miss seeing my name each month on the inside cover of the AKE, but sometimes you have to make sacrifices. I feel privileged to have had the chance to work for the organization in this capacity and will always remember it. I will probably have to, for I have my doubts that after this note is read anyone would give me the chance to be an editor again. Which is probably for the best.

See you in '92.....

Ron Ringer
former Associate Editor AKE

(From the Editor: Despite his tongue-in-cheek parting note, Ron has been an important part of the AKE team. Not only has he been of assistance in award selection and reader correspondence, but has always made himself available when I had a technical question on zoos or zoo animal species. His wit and good humor will be missed at each deadline. S.C.)



Information Please

I am an animal science major at the University of Hawaii Hilo. Our farm is looking for information on what type of fly control various zoos are using. Methods must be adaptable to cattle and horses specifically. Please send information to: Patricia Carney, 15-2691 N. Mano St., Pahoa, HI 96778.

Within the next 12-18 months, the Pittsburgh Aviary plans to create an indoor exhibit featuring migratory birds native to the northeast. The exhibit is approximately 30' L x 10' D x 12' H, and will contain a small pond. Tentatively, we plan a population containing representatives from the following: Vireos, Wood Warblers, Kinglets, Gnatcatchers and Cuckoos. We are interested in husbandry information, particularly regarding diet, introduction procedures or aggression problems. Please send any comments or suggestions to Lynn Leindecker, Pittsburgh Aviary, Allegheny Commons West, Pittsburgh, PA 15212.



Coming Events

1991 AAZPA Annual Conference

September 15-19, 1991

San Diego, CA

1991 American Association of Zoo Veterinarians Annual Conference

September 28-October 3, 1991

Calgary, Canada

For general conference or association information contact: Wilbur Amand, VMD, Executive Director, AAZV, Philadelphia Zoo, 34th St. & Girard Ave., Philadelphia, PA 19104, (215) 387-9094; FAX (215) 387-08733. Individuals interested in participating in the program should contact William Foster, DVM, Louisville Zoo, P.O. Box 37250, Louisville, KY 40213; (502) 459-2181.

1991 AAZK National Conference

October 6-11, 1991

Toledo, OH

For further information write: Toledo Zoo AAZK Chapter, Conference '91, Toledo Zoo, 2700 Broadway, Toledo, OH 43609.

19th Annual Conference of the International Marine Animal Trainers Association

November 3-8, 1991

Vallejo, CA

Conference will be held at the Sheraton Hotel in Concord and will include paper sessions, poster presentations, discussion groups, SAIC/SEACO art contest, informal film and video presentations and tours at Marine World Africa USA. For further information contact: Sonny Allen, Vice President/IMATA, c/o Marine World Africa USA, Marine World Parkway, Vallejo, CA 94589.

Understanding Chimpanzees: Diversity and Survival

December 11-15, 1991

Chicago, IL

Organized by Jane Goodall, the conference will take a comparative approach to understanding the behavior of chimpanzees and bonobos; documenting behaviors and behavioral variability, investigating hypothesis that explain variations, and exploring comparative methodology. Held at the Chicago Academy of Sciences, the symposium will explore the use of video for documentation and comparison. The conference will survey the population status of Chimps and Bonobos, the threats to their habitat, and the development of sanctuaries. It will pursue an agenda for conservation in the wild and in captivity. To receive a preliminary program and registration information, contact: Linda Marquardt, The Chicago Academy of Sciences, 2001 N. Clark St., Chicago, IL 60614 (312) 943-6969.

The Ninth Dr. Scholl Conference on the Nutrition of Captive Animals

December 13-14, 1991

Chicago, IL

Co-sponsored by the Lincoln Park Zoological Society and the Chicago Park District, the conference will be held at the Lincoln Park Zoological Gardens. There will be general sessions on **Captive Animal Nutrition** and a special session on **Avian Nutrition**. For registration information, contact: Lois Stanley, Lincoln Park Zoo, 2200 N. Cannon Dr., Chicago, IL 60614, (312) 294-4666.





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Births & Hatchings



A Plea To "Births & Hatchings" Contributors

The Zoo Infant Development Project (ZIDP) needs your help. As I read through the B&H each month I find the potential wealth of information hidden within the paragraphs to be mind-boggling.

ZIDP needs YOUR information on parent-reared zoo infants. The form is easy to fill out and EACH ONE contributes to strengthen the project.

So if you, composer of your zoo's B&H submission, would please take an extra minute and distribute ZIDP Data Collection forms to those keepers with the new births, then we will be able to guarantee the success of this AAZK project.

Sincerely,

Harmony Frazier-Taylor
Project Coordinator

Forms may be requested from me at:
Woodland Park Zoo
5500 Phinney Ave. N.
Seattle, WA 98103
(206) 684-4866

Lion Country Safari (West Palm Beach, FL)... "They are obviously comfortable here," said a beaming Diana Alexander, DVM Safari World Amusement Park Curator at Lion Country Safari when it was announced that the pair of Cinereous vultures (*Acorypius monachus*), that made zoological world headlines last year with what was believed to be the first multiple hatching in captivity, repeated the feat recently. "Of course, their environment, diet and the right material for nesting is very important," Diana added.

The latest multiple hatchlings, named Victor and Victoria, were hatched on 12 April and 12 May respectively after a 52-54 day incubation period. At birth the chicks weighed between 130-150 grams. Cinereous vultures, also known as the European black vulture, are the largest of the Old World birds of prey with adults standing 2 1/2 feet tall and weighing 17-18 pounds with a wingspan of 7-8 feet. There are approximately 1500 of this species left in their wild habitats in Spain and the USSR. They are listed as Threatened by CITES. As with the first multiple birth, meticulous records are being maintained and made available to other zoos in order to increase the successful propagation of this species. *excerpted from Lion Country Safari News Release by Sydney K. Smith.*

Zoo Atlanta... Zoo Atlanta and the Yerkes Regional Primate Research Center of Emory University are pleased to announce the birth of a gorilla in the Ford African Rain Forest at the zoo. Mother Kuchi, age 6 1/2, gave birth on 14 May around 0915 hrs. while inside the off-exhibit holding area of the rain forest. The infant was first discovered by keeper Bernard Gregory. The baby is believed to be a male and the father is 30-year-old Ozoum, one of 16 Yerkes gorillas at Zoo Atlanta.

Kuchi, one of the youngest gorillas ever to give birth in captivity, is caring for the baby normally. "Mother and baby are doing well," says veterinarian and assistant director Dr. Rita McManamon. "Yerkes veterinarians and I recently conducted a physical on Kuchi and checked her health, including ultrasound examination, and everything seems to be normal."

"Visitors to the zoo when the rain forest opened three years ago may remember Kuchi riding on the back of her mother, Paki," says Yerkes Center Director Dr. Frederick A. King. "Kuchi obviously has grown up. Indeed, more recently, she became known for carrying her younger brother, Kekla, around as if she was his mother."

Birth & Hatchings, *Continued*

Based on research pioneered at Yerkes, the zoo plans to keep Kuchi and her baby with their group and to continue their normal daily routine in their habitats, barring unforeseen circumstances. In the past, zoos often removed pregnant females from their social groups prior to giving birth and during the first months of the infant's life. Research by Yerkes scientist Dr. Ronald D. Nadler has helped to change this practice. "Our research showed that the practice of isolating pregnant gorillas not only does not promote maternal care, but, in fact, may have been the major cause of the inadequate care shown by many gorilla mothers in captivity," says Dr. Nadler. The progress and behaviors of Kuchi and her baby will be closely observed by Yerkes and zoo scientists to further understanding of this endangered species.



Kuchi, 6 1/2 year old female at Zoo Atlanta with her infant born 14 May. The baby is believed to be a male. *Photo courtesy of Zoo Atlanta.*

Birth & Hatchings, Continued

The new gorilla, which will be named by the Yerkes Center, is the fourth born at Zoo Atlanta. Three gorilla babies were born to the Yerkes family groups at the zoo in 1989, within a year of the opening of the Ford African Rain Forest. This exhibit allows the gorillas to live in natural surroundings and in normal social groups. *submitted by Lisa Littlefield, Zoo Atlanta P.R. Dept.*

National Zoological Park (Washington, DC)...reports the following significant B&H (and acquisitions) from January-May 1991.

Dept. of Mammalogy - the primate unit is proud to announce to significant SSP births. In February, our female Sumatran orangutan (*Pongo pygmaeus abelii*) gave birth to a 1.0 infant named "Chang, Jr." The parents are: 0.1, captive-born, 24-year-old "Pensi" and 1.0 wild-born, 30+ year old "Chang" (who was on loan from the Louisiana Purchase Gardens & Zoo). This was Pensi's 6th offspring to date, but only her first pure-bred Sumatran infant. Although Chang, who died in January, had previously sired other offspring, Chang, Jr. is his only surviving offspring. The birth of Chang, Jr. is doubly significant because the infant represents a new genetic bloodline for the Sumatran subspecies.

A 1.0 Western lowland gorilla (*Gorilla gorilla gorilla*) was born in May 1991. His parents are 9-year-old "Mandara" (on loan to NZP from the Milwaukee County Zoo) and 10-year-old, 1.0 "Augustus" (Gus, on loan from the Bronx Zoo). The infant is healthy and Mandara is providing excellent maternal care. This is the first gorilla birth at NZP in 19 years. The infant is being parent-reared in a five member "artificial" group of unrelated individuals.

Our recently acquired breeding pair of endangered Red wolves (*Canis rufus*) produced 2.3.1 pups in May. 0.0.1 DNS, but the other 2.3 are healthy and growing quickly. Both parents are very attentive; the adult male has been seen killing birds in their exhibit and placing them at the female's den entrance.

Other notable births in the mammal department include: 1.0 Sloth bear (*Melursus ursinus*); 0.0.1 Bongo (*Tragelaphus eurycerus isaaci*); 0.0.2 Serval (*Felis serval*); 0.0.1 LaPlata 3-banded armadillo (*Tolypeutes matacus*) but DNS; and 0.0.5 Small Madagascar hedgehog tenrec (*Echinops telfairi*).

New acquisition: 1.0 Jaguarundi (*Felis yagouaroundi*). The zoo plans to obtain a female in the future and hopefully begin a breeding program.

Dept. of Ornithology - our notable hatchings include: 0.0.1 Micronesian kingfisher (*Halcyon cinnamomina*); 0.0.5 Blue-crowned parrot (*Loriculus galgulus*); 0.0.1 African pugmy falcon (*Polihierax semitorquatus*) - this is a first for the zoo; 0.0.2 Derbyan parakeet (*Psittacula derbiana*); 0.0.1 Barbary shrike (*Laniarius barbarus*) - D'Í; and 0.0.2 White-backed mousebird (*Colius colius*) - 0.0.1 DNS.

Dept. of Herpetology - our significant B&H include: 0.0.13 Dwarf caiman (*Paleosuchus palpebrosus*) - two separate clutches were hatched out; 0.0.19 Green tree python (*Chondropython viridis*); and 0.0.10 Emerald tree boa (*Corallus caninus*).

Dept. of Zoological Research - the following notable births occurred in our Research Dept.: 0.0.3 Lompoc kangaroo rats (*Dipodomys heermanni arenae*), although these infants were conceived in the wild, DZR hopes to breed wild-caught Kangaroo rats; 4.1 Common tree shrews (*Tupaia glis*), 3.1 Lesser tree shrew (*Tupaia minor*), and 1.0 Long-nosed tree shrew (*Tupaia tana*).

Conservation & Research Center (CRC) in Front Royal, VA - CRC specifically breeds rare and endangered species. Their most recent births include 0.0.6 Tiger quoll (*Dasyurus maculatus*) - 0.0.2 DNS; 0.0.1 Przewalski's wild horse (*Equus przewalskii*); 2.3 Pere David's deer (*Elaphurus davidianus*); 1.1 Sable antelope (*Hippotragus niger*); 0.0.1 Scimitar-horned oryx (*Oryx dammah*); and 0.0.1 Western tarsier (*Tarsius bancanus*) - DNS. In April, CRC received 1.1 Pudu (*Pudu pudu*) which are on loan from the Bronx Zoo. *submitted by Jerry Harris, NZP AAZK Chapter B&H Reporter.*

Birth & Hatchings, Continued

Philadelphia Zoological Garden...the following are reported B&H from Jan.-May 1991:

Mammals - our Naked mole rats (*Heterocephalus glaber*) population is continuing to grow. We have four breeding groups. One pair are offspring from the original colonies and have just produced our first second generation litter.

Our Short-eared elephant shrews (*Macroscelides proboscideus*) are doing just as well with 11 young in the past 5 months (3 DNS). These animals are available to any zoo that wants an interesting and lively exhibit.

A pair of Short-nosed echidnas (*Tachyglossus aculeatus*) produced one young. Unfortunately, it did not survive but there is hope for future breeding. This is the third hatching at the PZG and the first since 1985. We had a male Reticulated giraffe (*Giraffa camelopardalis reticulata*) born name "Matu" meaning sky in Kikuyu. We were very excited and surprised by 2.0 Lesser slow loris (*Nycticebus pygmaeus*) born in our small mammal house. This is the second litter from our pair. It's exciting because zoos have experienced difficulty getting this species to breed more than one time.

A Plantain squirrel (*Callosciurus notatus*) was born here which was also unexpected and welcomed as it is thought to be the first one born in captivity. A male Aardvark (*Orycteropus afer*) was born this spring but unfortunately it died of exposure. A female Gunther's dik-dik (*Madoqua guntheri smithi*) was born to a pair we have on loan from the Dallas Zoo.

We have opened a new cheetah (*Acinonyx jubatus*) exhibit with a pair (1.1) of siblings from White Oak Plantation. We eventually plan to trade males with another zoo and begin a breeding program.

Our young adult Gorilla (*Gorilla g. gorilla*) Jessica was loaned to the San Diego Zoo to be a part of a new breeding group. We have high hopes for her since she was mother-reared and helped raise three younger siblings.

Birds - Four new Humboldt penguins (*Spheniscus humboldti*) were introduced to our group to stimulate breeding, and although pairs were formed and eggs laid, only one proved fertile. Unfortunately, the chick died prior to hatching.

Reptiles - During this time the reptile house has produced Red cat-eyed snakes (*Boiga nigriceps*) and Prehensile-tailed skinks (*Corucia zebrata*). We have also had special guests visit us this winter. Two White alligators (*Alligator mississippiensis*) loaned from the Audubon Zoo made a guest appearance for two months. submitted by Beth Schwenk Chapter Liaison, Philadelphia Zoo AAZK Chapter, Philadelphia, PA.

Denver Zoo...reports the following B&H from Jan. - June 1991:

Hoofstock/Carnivores - 0.0.2 Amur leopards (*Panthera p. orientalis*) were born 24 May. This is a special event for the Denver Zoo. Our pair came to us in January 1990 - the male from Finland and the female from Holland. This is the first time the Denver Zoo has exhibited this very rare species of leopard. There are believed to be only 250 individuals left in the wild and captivity combined. The births are very encouraging since the pair has only been together for a little over a year and the male was hand-reared. Due to feline building renovations, they are currently being housed at the zoo's animal hospital which is where the cubs were conceived and born. Hopefully we will have continued success when they are moved back to their exhibit.

0.0.4 White-nosed coatimundis (*Nasua narica*) born 5 May marked the first litter for our 1.4 coatis. This group was imported from South America and has been at the zoo since July of 1989. The mother is taking good care of the cubs, which is encouraging since this is her first litter. We expect to see them out of the nestbox anytime. 0.1 Blesbok (*Damaliscus dorcas phillipsi*) was born on 25 May and is the first surviving calf of this group. We had a

Birth & Hatchings, Continued

calf born last year to the same female but she inadvertently gored it and it was subsequently euthanized. This year the mother is taking good care of the calf and it is doing well. We are currently in the process of reintroducing the female and calf back to the herd.

Notable acquisitions include: 1.1 Warthogs (*Phocochoerus aethiopicus*), 0.1 Babirusa (*Babirusa babirusa*), and 1.1 Siberian tigers (*Panthera tigris altaica*). These are new species to the Denver Zoo and all seem to be adjusting well to their new homes. submitted by Karen Stern, Denver Zoo.

Birds & Primates - 0.0.2 Bali mynah (*Leucopsar rothschildi*) fledged from a newly matched pair. SSP is managing the Bali mynahs and we have always done well with this species. 0.0.9 Fairy bluebirds (*Irena puella*) were raised from two unrelated pairs. Two chicks were pulled at Day 7 and hand-raised. We have not raised many of this species in the last few years. 0.0.1 White ibis (*Eudocimus albus*) is being successfully hand-raised for the first time at our facility. 0.0.9 Emu (*Dromaius novaehollandiae*) are being hand-raised. This is the most we have ever had at once.

0.0.1 Slender loris (*Loris tardigradus*) was born from a new pair we obtained from Duke Primate Center. 0.0.1 Black lemur (*Lemur macacoo*) was a first born from our SSP pair. submitted by Suzanne Chacon, Denver Zoo.



"Bowling for Rhinos" Update

With the bowling event over and the proceeds steadily coming in, I can only state that I am very proud of all of your hard work and dedication. Your enthusiasm and creative abilities have once again made "Bowling for Rhinos" a successful event. This year we had 42 institutions continent-wide participating, up from 36 for last year.



Presently at the Ngare Ndare Forest Preserve 11 km of fencing is up and 75% of the way prepared for fence erection. This critical project had come to a virtual standstill due to lack of funds. In order to keep the crews working, \$15,000.00 was wired to Africa on 5 June '91.

Although collection is a slow and frustrating process, now more than ever we need your cooperation. If you have not submitted your BFR proceeds, please do so right away! Even if you have not been able to collect from all bowlers, send what you have accumulated. I will keep a running tote of monies earned by your local projects. Also additionally, you will be verbally notified that I received your chapter/institutions monies and that will be followed up with written confirmation for your event records. Once all money has been collected, you will receive written notification as to the total earned for the '91 event as well as the names of the lucky winners of the trip to Africa.

Thank you again for your commitment, hard work and dedication.

--Nanci Pintavalli, '91 BFR Coordinator



MEMO:

TO: AAZK Membership

FROM: Mark de Denus/LINK Coordinator

SUBJECT: Chapter Constitution/AAZK Chapter Project Proposal Form

Since the middle of last year, the AAZK Board of Directors, Administrative Secretary Barbara Manspeaker and I have been discussing and working on a major endeavor regarding the operation of AAZK Chapters and, indeed, the basic function of the organization itself. The operation of Chapters of AAZK, Inc. has become a very important priority and concern of the Association, especially in light of the IRS requirements for non-profit status (commonly called 501(c)(3) status!)

Compliance or conformity is mandatory for certain aspects of Chapter function and operation. These include Authorization for Inclusion in IRS Group Exemption Letter and an Annual Report of a Financial Statement for each Chapter. These result in the issuance to each Chapter of an Employer Identification Number (EIN) for each specific Chapter (again, a required obligation). To date, almost all AAZK Chapters have an individual (Chapter) EIN.

To further facilitate the smooth and efficient operation of this growing organization, standardization process was proposed and implemented. This has gone very well. ALL CHAPTERS now recharter annually, at the same time; this includes signing of a recharter application and agreement by current officers and submission of an annual financial statement. Fiscal year and election of Chapter officers has also become standardized to facilitate the above recharter process. (Fiscal year for Chapters should run from January to December as should the terms of office for Chapter officers.)

A priority (and hopefully) final issue of standardization needed to be addressed; that is a standardized CHAPTER CONSTITUTION. In order to rectify this situation amongst existing Chapters (and also assist newly forming Chapters by providing a 'ready-made' constitution/operating by-laws) a standard constitution has been drafted and approved by the AAZK Board. All Chapters have been sent this document.

The major portion of the CONSTITUTION is the General Articles containing 7 articles which include Name, Statement of Purpose, Officers, Membership, Elections, Management, and Chapter By-law Customization/Amendments. THESE ARTICLES MUST BE ADOPTED BY EVERY CHAPTER. They include all the essentials which bind each Chapter, legally and clearly, to AAZK, Inc. In light of investigation of existing Chapter constitutions and advice from the AAZK attorney regarding IRS requirements and Chapter linkage, this furnished Chapter Constitution is a necessary and imperative part of Chapter standardization.

The second part of the CONSTITUTION is the Articles of By-laws which direct the function and operation of each Chapter. These outline the rules to follow in specific regard to membership categories, elections, meetings, officers, and other matters. These by-laws may be customized locally by each Chapter in accordance with Article VII of the Chapter Constitution, and Article VIII, Section 2 of the AAZK National By-laws. as long as they do not create a conflict between these sets of by-laws! All amendments to Chapter Constitutions must be sent (semi-annually) to RCs (or to the LINK Coordinator if no RC is available) as instructed in the Chapter Semi-Annual Report.

On behalf of the AAZK Board of Directors, I have asked each Chapter Executive to present this Chapter Constitution Document to the Chapter membership. **ADOPTION OF THE GENERAL ARTICLES IS MANDATORY FOR THE CHAPTER TO FUNCTION.**

The Mid-Year Board meeting of AAZK, Inc. took place from 27-30 April in Topeka. I was invited to attend in order to interpret and report on various, pertinent subjects and issues to the membership. This memo will highlight some of the major issues discussed.

LINK Memo, Continued

The agenda for the meeting was very comprehensive with over 35 topics or issues to be addressed. Many of the topics were covered by current committee or project reports sent in by the chairpersons. Further information on these reports will be available through publication in AKF or may be requested directly from Administrative Offices.

In my position as LINK Coordinator, I was able to report on the current status of the LINK system, Chapter issues or problems and other related material. There are currently 27 Regional Coordinators working the system. These RCs are in place to assist Chapters or individual members with any questions or problems, and to monitor Chapter activity throughout the year. There are 67 AAZK Chapters in Canada and the US. I encourage you to use your RC as a resource person and also assist this person by completing surveys and Chapter reports promptly. A list of RCs is published in each AKF. If you do not have an RC, please contact me or Administrative Offices with any inquiries. All RCs have been sent a second Semi-Annual Report Package. They will forward the Chapter Report on to AAZK Chapters.

A priority issue in regard to Chapters was discussed and approved. A model CHAPTER CONSTITUTION was drafted and proposed by myself for the Board's consideration and approval. The reason for this document became apparent when I first began to investigate existing Chapter Constitutions and By-laws. A number of things became apparent: either a Chapter did not have a Constitution (or were unable to provide one) - 36 out of 67 Chapters; or, where Constitutions existed, it was found to be in direct conflict with or in violation of National's By-laws - 14 out of 67. This is not appropriate or acceptable in regard to our non-profit status nor our professional image and operation as an Association.

Based on a proposal from Suzanne Husband of Toledo Zoo, a Fund-raising Committee was discussed and then referred to the AAZK Advisory Council for consideration. In existence already, though not well advertised or distributed, is an AAZK PROJECT /PRODUCT PROPOSAL FORM. It was felt that this could be modified and circulated for Chapters and membes to use for future proposal submission.

AAZK Project Proposal Form

The AAZK Project Proposal Form will be used by Chapters or individuals to propose a project, product, or fund-raising idea. The project categories should fall into one of the following types:

AAZK National project - this type would use the name and/or logo of the AAZK, Inc. and must have AAZK Board approval. The completed form and a clear representation of a prototype example must be included, where appropriate, with each project submission to the Board. Examples of these kinds of projects are AAZK Logo Coffee Mugs (thru Milwaukee Chapter) and AAZK logo T-shirts and Sweatshirts (thru Little Rock Chapter). Special notice and consideration of Article VIII, Section 7 of AAZK, Inc. By-laws is required.

Local Chapter Project - a local project initiated by the Chapter to raise funds for itself, or a local, national or international cause. The use of Chapter funds for expenses is allowable, without Board approval, up to the sum of \$999.00 (U.S.) Any expenditures of \$1,000.00 or more (U.S.) [as provided for in Article VIII, Section 6/AAZK By-laws] must have AAZK Board approval. Examples of this type of project are selling a product (Rainforest Crunch) locally for a profit; or selling raffle tickets locally for purchased prizes.

Regional Liaison Council Project - this is an expanded version of a local project; it involves more than one Chapter or participants and may be more complex. The same guidelines apply as with Local Chapter Projects. An example may be a regional fundraiser for a number of Chapters, or a regional, national or international cause.

Individual Members project - this type provides for an individual AAZK member who may not be affiliated with a Chapter but who wishes to initiate a project on behalf of or under the auspices of AAZK, inc. Use of the AAZK name and/or logo must have Board approval as well as any proposed contracts, on behalf of AAZK, Inc. totaling \$1,000.00 (U.S.) or more.

LINK Memo, Continued

Other issues were discussed at the Board meeting as well. The AKF Survey and the Keeper's Survey have had poor returns from the membership. Further results will be forthcoming.

An interesting topic addressed specific issues of concern to the Association. Position Statements of AAZK, Inc. with a viewpoint on particular areas have been in place for a number of months; these were reviewed and ratified by the attending Board members. Areas addressed were Animal Rights (Animal Exhibition, Euthanasia, Surplus Animals); Minimum Job Requirements for Zoo Keepers; and Criteria for an Organizational/Institutional Membership in AAZK.

Another important issue was AAZK, Inc. By-laws Revisions. A number of revisions have been proposed and appeared in the June issue of AKF for the membership's consideration. Proxy vote ballots were also included. The Board encourages the membership to read these revisions, and to voice their opinion and to vote in these matters.

If you have any questions or concerns about the Proceedings of the Mid-Year Board Meeting, please contact me, Administrative Offices or any members of the AAZK Board.



Nixon Griffis Fund for Zoological Research Awards Four Grants

The Nixon Griffis Fund for Zoological Research (NGFZR), established in 1984 by New York Zoological Society Trustee Nixon Griffis, awarded four research grants in May. The recipients were:

Cheryl Asa, PhD, St. Louis Zoo, and Lourens Zaneveld, DVM, PhD, Rush Presbyterian St. Luke's Medical Research Center

"Evaluation of Vas Plugs for Reversible Male Contraception"

Evan Blumer, VMD, Fossil Rim Wildlife Center, Jay Kirkpatrick, PhD, Eastern Montana College, and Lourens Zaneveld, DVM, PhD, Rush Presbyterian St. Luke's Medical Research Center

"A Comparison of Two Methods of Reversible Contraception in the Fallow Deer (Cervus dama): Vas Deferens Plugs vs. Immunocontraception Using a Porcine Zona Pellucida Vaccine"

Janine Brown, PhD, and Scott Citino, DVM, National Zoological Park

"Evaluation of Serum and Urinary Reproductive Hormones in Female Tapirs"

Karen Fulton and Sandra Kemspeke, Baltimore Zoo

"Feed Intake, Digestibility and Digestibility and Digesta Passage of the Aardwolf (Proteles cristatus)"

Nixon Griffis Fund for Zoological Research grants are available to members of the zoo and aquarium community. Fund recipients may be keepers, curators, veterinarians, or research and consulting biologists. Grants, not to exceed \$3000, are awarded semi-annually. Closing periods are 1 January and 1 July of each year. For information about the fund and grant application procedures contact: John Behler, Coordinator, NGFZR, c/o New York Zoological Society, Bronx Zoo, Bronx, NY 10460.





DOWN UNDER

By
Judie Steenberg, Keeper
Woodland Park Zoo
Seattle, WA

DOWN UNDER.....is an information column about Australasian animals. While there are a number of Keepers who work in Australasian Units, or routines, off times a Keeper will have a few species

of animals from the Australasian zoogeographical region on their string or routine. It is hoped this section will contain information on birds, mammals and reptiles.

This column is intended to:

- share experiences and information to improve the care and management of Australasian animals.
- seek information and advice on problems that occur.
- serve as a forum through which to make comment, to ask questions, to critique, or to verify information.

Please send your materials (a question, a paragraph or an article) directly to Animal Keepers' Forum, Topeka Zoological Park, 635 Gage Blvd., Topeka, KS 66606, Attn: Susan Chan.

The following two abstracts are presented here for your information and reference.

**The Mammals of Southern West Sepik Province,
Papua New Guinea: their Distribution, Abundance,
Human Use and Zoogeography**

T.F. Flannery¹ & L. Seri²

¹ The Australian Museum
6 College Street, Sydney, NSW 2000, Australia

² Department of Environment and Conservation
Division of Wildlife, P.O. Box 6601, Boroko, Papua New Guinea

ABSTRACT: A mammal survey was carried out between 1984 and 1987 in southern West Sepik Province, Papua New Guinea. Eleven major collection localities, as well as some more minor ones, lying at altitudes of between 120 and 3,200m were investigated. Voucher specimens for 87 indigenous mammal taxa were obtained, but research suggests that mammal diversity in the area may be as high as 120 species. This is the highest mammal diversity recorded anywhere in Australasia. A similar high bird density suggests that the area may be one of exceptionally high biodiversity overall. The most diverse mammal assemblages in the study area are found in the midmontane oak forests (between 1,500 and 2,500m). Seven species, which apparently have no ecological vicars elsewhere in PNG, inhabit these forests. Changing patterns of human exploitation endanger some of these species. Recommendations aimed at halting this decline are made. The effect of the

Down Under, Continued

introduction of cats in one area was assessed as cats were introduced in the middle of the survey period.

FLANNERY, T.F. 1990. The mammals of southern West Sepik Province, Papua New Guinea: their distribution, zoogeography, human use and abundance. Records of the Australian Museum 42(2): 173-208. ISSN 0067 1975.

Dendrolagus scottae n. sp. (Marsupialia: Macropodidae): a New Tree-kangaroo from Papua New Guinea

Tim F. Flannery¹ & Lester Seri²

¹Australian Museum
P.O. Box A285, Sydney South, NSW 2000, Australia

²Division of Wildlife
P.O. Box 6601, Boroko, Papua New Guinea

ABSTRACT: *Dendrolagus scottae* n. sp. inhabits mossy forest above 1,200m on the North Coast Range, Papua New Guinea. Its total known habitat area is estimated at about 25-40km². The species is gravely endangered, and its plight is symptomatic of that of many large mammals in Melanesia. *Dendrolagus scottae* differs from all other tree-kangaroos in its uniform blackish colouration, narrow but long dentary, shallow face, and wide P/3 with a large posterobuccal cusp. The combination of large cheekteeth but small masticatory muscles suggest that *D. scottae* n. sp. has a different feeding strategy to other tree-kangaroos. *Dendrolagus scottae* n.sp. and *D. dorianus* possess a number of features which are unique among near relatives. These include the presence of a greatly reduced superior lachrymal foramen, large cheekteeth, uniformly dark dorsal and ventral colouration, and a very short tail. These derived features indicate that these two species are each other's closest relatives.

FLANNERY, T.F. & L. SERI. 1990. *Dendrolagus scottae* n. sp. (Marsupialia: Macropodidae): a new tree-kangaroo from Papua New Guinea. Records of the Australian Museum 42(3): 237-245. ISSN 0067-1975.

Chapter News

National Zoo AAZK Chapter

AAZK-NZP has joined together with the Friends of the National Zoo (FONZ) and Reynolds Aluminum in a campaign to "Be Nice Twice" which advertises through posters and on radio for zoo visitors and area residents to bring their aluminum cans to the zoo for recycling. Aluminum cans are also collected at zoo events.

The Chapter also recently purchased a subscription to "GARBAGE" magazine which is an informative resource for recycling ideas.



The Chapter received and complied to a request for all keepers to complete a six-page, work-related survey to be returned to the Regional Coordinator (AAZK Zoo Keeper Survey).

Two weeks before Earth Day our Chapter was asked by the Association of Zoo and Aquariums Docents-Docent Council of the National Zoo (DCNZ) to construct an exhibit of a mock cemetery to represent species that have become extinct at the hands of man.

Due to the time limitation, a mock cemetery was not possible. However, the Chapter was able to complete 171 12" x 18", weather-proof flags using 3" letters on 3 colors of fabric. These flags represented some of the reptiles, mammals and birds that are now

Chapter News, Continued

extinct. The flags also included the year of their extinction. Each flag was stapled onto two stakes which were then secured into the hillside of our Lion/Tiger Exhibit (which is a high visibility area across from the zoo's restaurant).

The FONZ Education Office asked if they could have the flags to use at future zoo events, such as "Zoo Night". The Chapter wishes to extend its gratitude to all persons who helped with this project.

--Kathy Kelly, Chapter Liaison

San Diego AZK Chapter

On the evening of 16 May, the Chapter was pleased to have Dr. Don Janssen, DVM, Director of Veterinary Medicine at the San Diego Zoo, lecture at the monthly meeting. Dr. Janssen spoke on his July 1990 trip to Kruger National Park in a program entitled "Immobilization Field Trials in South Africa".

Dr. Janssen discussed the use of A3080, an experimental drug with a rapid down time, on a variety of hoofed species: impala, warthog, eland, elephant, cape buffalo, waterbuck, greater kudu and rhino. One hundred sixty-five animals were darted and processed. Portable hi-tech machines monitored blood pressure, temperature, oxygen saturation and heart rate. Weights and blood samples were taken. Dr. Janssen presented an interesting video along with slides during his talk.

At the AAZK Board of Directors meeting on 3 June, past president Nolan Harvey was unanimously voted to 'Life' member status in the local Chapter. Cindy Woodward was voted to fill Nolan's position on the Board of Directors. Congrats, Cindy!

"Bowling for Rhinos" update: \$8,500 was raised for the Ngare Ndare Forest Reserve.

--Mary Dural, Chapter Liaison

Tulsa Zoo AAZK Chapter

Through the coordinated efforts of the Zoo Conservation Outreach Group (ZCOG), our Chapter hosted Dr. Pablo Varela, a zoo veterinarian from the Guadalajara Zoo, for two weeks in May. Dr. Varela spent time with keepers in all areas of our zoo as well as visits with zoo veterinarians at Sedgwick County Zoo in Wichita, KS, the Oklahoma City Zoo and the Oklahoma State University School of Veterinary Medicine. Dr. Varela hopes to apply much of what he learned towards improving the Guadalajara Zoo.

Our Chapter also held its first "Keeping Up With The Keepers" program (as originated by the Philadelphia Zoo's AAZK Chapter). We offer our Tulsa Friends members the opportunity (along with a fee) to work along side our keepers during part of their morning routine. All the participants had an excellent time and want to do it again! We plan on offering this program at least every other month throughout the year. We are very happy with its success so far.

--Sarah Leeg, Chapter President

Philadelphia Chapter AAZK

Our Chapter has been very busy for the past five months. Some of the more exciting highlights are:

We have had one "Meet the Keeper" evening and two "Keeping Up With The Keeper" mornings.

A lecture committee has been formed to plan a series of talks this year. Our first guest speaker was Fred Ulmer who was Philadelphia Zoological Garden's first curator of mammals. We also had John Guarnaccia from RARE speak to us on tropical conservation.

Our Chapter has decided to form a "sister zoo" relationship with the Minerva Zoo in Quetzal Tenango, Guatemala. This is a zoo that is in great need of support.

Chapter News, *Continued*

We have also donated money to our zoo for the renovation of a large sign next to our elephant exhibit. The sign will ask visitors not to feed the zoo animals and explain the dangers of doing so.

In April our Chapter participated in a local Earth Day celebration. At our booth we sold Ngare Sergoi rhino T-shirts, handmade pins, our "Do Not Feed the Animals" pins, and ISEC T-shirts.

Many of our Chapter members and some non-members have formed a Behavioral Enrichment Group. This group will attempt to tackle animal enrichment problems in our zoo as well as come up with new ideas to try here.

Our Bowling for Rhinos was a bigger success than we expected. We ended up with 86 bowlers and right now our total collected is approximately \$4,500.00.

On a final note, the price of our "Do not feed..." buttons and mesh shopping bags has increased due to greater postage costs. Buttons are now \$1.25 each for 1-20 and \$1.00 each for 21 or more. Mesh bags are \$4.00 each plus \$1.00 each shipping.

--Beth Schwenk, Chapter Liaison

Rocky Mountain Chapter

With proceeds from selling Rainforest Crunch, we purchased 20 acres in Belize through the Ecosystem Survival Plan (ESP). Our Chapter has raised over \$1,000 from selling the crunch and all the money will go to the ESP.

Money is still coming in from our Bowling for Rhinos event. We have raised over \$6,000 which included selling T-shirts and posters.

We are currently planning our annual picnic for the animal staff at the Denver Zoo. Also we contributed \$200.00 to help Sue Woods (a PhD candidate doing research on gorilla behavior) be with our adult female Lowland gorilla after she is shipped to Dallas. Our Chapter strongly felt it was a good idea for her to be with our gorilla, Maguba, when she arrived at a

strange, new zoo. We are continuing to raise more money for Sue by having bake sales.

--G. Suzanne Chacon, President

Central Florida Chapter AAZK

Officers elected for 1991 are as follows:

President.....Debbie Zombeck
Vice Pres.....Liz Yerian
Secretary.....Laura Reynolds
Treasurer.....Bonnie Breitbeil
Chapter Liaison.....Michael Cothran

Hello to all fellow, hardworking, dedicated zoo keepers! Our Chapter consists of zoo keepers from Central Florida Zoo, Discovery Island, Sea World of Florida, and Alligator Land Safari Zoo. The last six months of 1991 have been very busy and productive for our Chapter - and many of the goals we set at the beginning of 1991 have already become reality.

We increased our membership by 50%. We changed our meetings from Bi-Monthly to Monthly. We designed and implemented a new format for our newsletter and the results have exceeded our expectations - thanks to the creativity and dedication of our Chapter Liaison J. Michael Cothran.

Our bank account has enough money to help send several members to the National Conference and pay for any projects we partake in. Finally, our first major fundraiser, Bowling for Rhinos, was a tremendous success, netting approximately \$1600.00 for what we believe is a great cause!

We are currently searching for our next big fundraiser. We would love to hear from any other Chapter who knows of a cause greatly in need and would like to possibly join us in a combined effort to raise funds. If interested please contact: Debbie Zombeck, Sea World Aviculturist, 7007 Sea World Dr., Orlando, FL 32821.

--Liz Yerian, Vice President





Book Review

Bites & Stings. The World of Venomous Animals

By John Nichol, 1990

Facts on File, Inc., 460 Park Ave. S., New York, NY 10016

208 pgs; introduction, 10 chapters, appendix, bibliography,

index; b&w and color photos, some figure drawings

Price: \$19.95 Hardcover

*Review by Mike Demlong
Exhibit Construction Coord.
Wildlife World Zoo
Litchfield Park, AZ*

As you slowly thrust your hand downward into a nestbox or some other unseen dark corner, do you ponder the habitation by creepy crawlies? We all inherently hesitate before placing our limbs into, under, or behind something with anxiety of being bitten or stung; undoubtedly this behavioral trait had significant adaptive value to our ancestors! Attempting to alleviate our apprehension of venomous animals, John Nichol, the author, wrote this book to: 1) mock fictitious tales regarding these unique animals and 2) provide accurate information. Nichol openly acknowledges this book "is not a book for the specialist, but rather for the person who knows little about the subject...". Definitely not written as a scientific text or even a coffee table book considering the few pictures are poorly composed.

Titled *The Natural History of Venomous Animals*, the book's first chapter begins with a brief natural history review of venomous animals including: mammals, reptiles, amphibians, fish, arachnids, insects, echinoderms, coelenterates, and mollusks. Each group is lightly discussed except those taxa whose bite or sting is of dire consequence to humans - to these he devotes more space. Also included in this chapter are folk stories, bits of trivia about venom toxicity and case histories of inflicted individuals. The next chapter includes popular folk remedies used to help alleviate pain or prevent human deaths caused by animal toxins.

Turning now from man's dread to his fondness of venomous animals, the succeeding chapter briefly examine the buying and selling of mainly snakes for human consumption, medicinal purposes and other ethnic uses. Diverging from this chapter is a block of four chapters further exploring the influence of venomous animals on human societies.

Immediately following this block of chapters is the one chapter of which I disapprove - *The Keeping of Venomous Animals*. Only because the author superficially discusses the housing, buying, and breeding of these unique animals in six short pages, hardly enough space to describe proper husbandry techniques to an inexperienced reader and potential owner. Better use of these pages would have been to explain why private individuals should not keep venomous animals. Especially since pet trade pressures on venomous species constitutes a significant factor in population declines, a fact he fails to mention in the ensuing chapter - *Conservation*.

In the final chapter of this book, *Rattlesnake roundups and killer bees*, Nichol comments on the senseless destruction of rattlesnakes at festive events and devotes a few paragraphs to the advance of Africanized bees.

Alphabetically listed by country, the appendix contains the names and addresses of suppliers worldwide who provide antivenoms for snakes and other venomous animals (e.g. spiders, stonefish, scorpions).

Bites & Stings is an easily read collections of trivial anecdotes and stories of interest to both layman and seasoned herpetologist. It should be required reading for those megafauna lovers who scarcely acknowledge any organism other than those with mammary glands and hair.



Conference '91 -

FINAL CALL FOR PAPERS

Papers will be accepted on all aspects of zoo keeping. The papers will be limited to 20 minutes followed by a 5-minute question and answer period. We are also calling for papers on: animal rights, the evolving role of a zoo keeper, and a zoo keeper's role in conservation. Guidelines for Typing Papers for AAZK Conference Proceedings will be sent to each author whose paper is accepted. These guidelines must be followed to be published. Written papers must be turned in prior to speaker's presentation.



Please submit an outline or abstract **by 31 July 1991** and include the following information in order to be considered for acceptance: Name of Presenter, Zoo Affiliation, Position/Title, Title of Paper, Equipment Needed. Send to: Bill Whittaker, AAZK Program Committee, 1011 Shadowlawn, Toledo, OH 43609.

Our conference plans are proceeding very well and in the next issue of AKF we hope to present a preliminary schedule of activities. It is still not too late to get in any last minute requests or suggestions for incorporation into our plans.

Please keep in mind that the lunches for all 5 days will be provided at no charge. Considering the average zoo keeper wage, this is a big bonus.

Plan to join us on the North Coast in October. Our fall weather is very pleasant with day temperatures in the 60's and 70's and night temperatures in the 40's and 50's so be sure to bring a jacket. The fall colors will be coming on and should present a vivid background for what will be a very "colorful" conference. I assure you this will be a conference to remember.

Pre-Conference Gathering in Columbus

Hozer and Elvis have been having too much fun here in Columbus. They are now refusing to ever leave the central Ohio area. They may have to be physically forced to go to the 1991 Conference (although we've assured them they'll enjoy Toledo and the AAZK Conference as much as they're enjoying Columbus). Come to Columbus October 4th & 5th for education and fun. Help us convince Hozer and Elvis that their tradition as conference mascots is terribly important to zoo keepers all over the country - even all over the world. (Of course - if we can't convince them we can always bag them and drag them up there!)

1991 Columbus Pre-Conference Registration

Name _____

Address _____

Telephone _____ Organization _____

Vegetarian YES NO Please specify type _____

Arrival date and time _____

Please return to: Carl Gyarmaty, Columbus Zoo AAZK, P.O. Box 1256, Powell, OH 43065

HOTEL REGISTRATION REQUEST

1991 National AAZK Conference

October 6-11, 1991

Toledo, Ohio



2429 South Reynolds Rd.

Toledo, Oh 43614 • (419) 381-8765

Name _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____ Telephone # () _____

Arrival Date _____ Check-out Date _____

Room guaranteed by: _____ Mastercard _____ VISA _____ American Express

Credit Card # _____ Expiration Date _____

OR

_____ Check for one night's lodging (make check payable to Holiday Inn Southwyck). A 72-hour cancellation is required for a deposit refund.

Accommodations Requested:

Standard Room	(1-4 persons)	\$58.00	_____
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Executive Tower	(1-4 persons)	\$68.00	_____
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I will be sharing a room with _____

Check-in time is 3:00 p.m.. Check-out time is 11:00 a.m. For additional information, please call the Holiday Inn Southwyck at (419) 381-8765. Reservation deadline is 15 September 1991. Thank you.

Return this form to:

HOLIDAY INN SOUTHWYCK
2429 South Reynolds Road
Toledo, Ohio 43614

1991 AAZK Conference Registration Form

October 6-11, 1991
Toledo, Ohio



PLEASE TYPE OR PRINT
(one name only per form please)

Name _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____ Telephone # (_____) _____

Zoo Affiliation _____

AAZK Committee Member _____

Is this your first AAZK Conference? _____ YES _____ NO How many attended? _____

I will be submitting a paper _____ YES _____ NO
(\$25.00 will be refunded from registration fee upon acceptance of paper)

Participating in Zoolympics? _____ YES _____ NO

I am bringing an auction item _____ YES _____ NO

Vegetarian _____ YES _____ NO Please specify type _____

I am interested in a Conference T-shirt? _____ YES _____ NO (S M L XL)

ARRIVAL date and time: _____

AAZK membership status and fees:

Member or Spouse	\$70.00
Non-member	\$85.00
Late Fee	\$10.00 (after 1 September 1991)
Total fees enclosed \$	_____

PLEASE NOTE that registration fee DOES NOT include the Conference Proceedings.
Information on how the Proceedings will be handled for 1991 will be published later.
Registration Fee DOES include ALL LUNCHES during the week.

Daily rates for individual events are available.

Contact Wayne Carpenter - Days (419) 385-5721 Evenings (419) 874-9913

Please make checks payable to: Toledo Zoo Chapter AAZK

Return this form with fee to: Toledo Zoo AAZK Chapter, Conference '91, 2700 Broadway,
Toledo, OH 43609

Calling All Animal Imitators

During the past AAZK conferences, the sounds of gibbons have been heard through the hotel halls and bars and we've often wondered if there are other fascinating animal sounds that the delegates enjoy making. As part of our Zoolympics at the Toledo Conference, those brave individuals will get a chance to go public with their creations during the "Animal Imitations Contest". These will include vocalizations and body gestures. The categories will be: birds, mammals, reptiles/amphibians, fish and insects. Further details will be in future AKF's so let's get practicing!!

Delta Airlines Official Conference Carrier

Delta Airlines is offering special discounts for our delegates. For information, call Delta or have your travel agent call 1-800-221-1212 and ask for special meetings network. Be sure to give our file reference number D51058 for the discount.

Post-Conference Mystery Trip

\$266.00 per person (double occupancy)

--includes: round trip transportation

2 nights accommodation

2 lunches

1 dinner

--Fee due by 1 August, 1991

Departure: Saturday, 12 October, 1991, 7:00 a.m.

Return: Monday, 14 October, 1991, 7:30 p.m.

****Proof of citizenship is required on this trip****

Agawa Canyon

You will travel by motor coach to Frankenmuth, MI for your first rest stop, then it's on to Sault St. Marie, Ontario where you will stay at the Holiday Inn. The following day you will board the Algoma Central Railroad for your trip into the Western Ontario Wilderness and the Agawa Canyon. This area is a continuous chain of mountains, lakes and virgin forests unspoiled by man. A two-hour stop will be made at the canyon so you can explore this beautiful area. On the final day of your trip, you will begin your return to Toledo, with a stop at the Alpena Ski Resort.

Hurry! Get your money in now! This is your last chance!

Have any questions? Or want more information!

Contact Cathi Benner or Sharon Sieja at (419) 385-5721

Legislative Outlook

By

John Stoddard
AAZK Legislative Advisor
Chicago, IL



Agreement Seeks to Halt Decline of Neotropical Migratory Birds

Secretary of the Interior Manuel Lujan recently announced the beginning of a new international effort to halt the decline of some of the western hemisphere's most beautiful and best-loved birds. Seven Federal agencies signed an agreement in May to promote conservation of "neotropical" migratory birds -- those that breed in the U.S. and Canada and winter south of the U.S. Neotropical migrant birds include such well-known species as the northern (Baltimore) oriole, scarlet tanager, ruby-throated hummingbird, rose-breasted grosbeak, wood thrush, bobolink, broad-winged hawk, and many warblers, as well as other species of forest and grassland birds.

Nearly a quarter of U.S. bird species are neotropical migrants. In some states, more than 70% of neotropical bird species experienced population declines from 1980-89, according to the Fish and Wildlife Service's Breeding Bird Survey. In the eastern U.S., 44 or 62 neotropical species declined from 1978-87.

Neotropical birds are most common in eastern forests, comprising 60-80% of both the species and the individual birds in these woods. They are also common in western mountain forests, and in deciduous forests in canyons and along streams and rivers. Some species, like the bobolink, nest in grasslands and hayfields.

The species that appear to be declining most seriously are those using forested habitats in both their breeding and wintering areas. In winter, neotropical birds often live in small geographic areas, and so are particularly vulnerable to deforestation and other habitat changes in Latin America and the Caribbean Islands. In the north, the birds are also believed to be affected by what biologists call forest "fragmentation", meaning large blocks of mature forest have been replaced with smaller patches of younger forest.

Many neotropical birds make truly remarkable odesseys. The delicate ruby-throated hummingbird and many other species cross the Gulf of Mexico or the Caribbean, flying several hundred miles over water with no place to stop. The blackpoll warbler prepares for migration by an eating frenzy that turns it into what one ornithologist calls "a little ball of fat." After migrating from Alaska and Canada to New England, the warbler launches itself across the ocean, beginning a nonstop flight to South America that takes 3-4 days. In the spring, they turn around and fly back--a 2,500 mile round-trip journey by a creature that would fit in the palm of your hand.

Some species migrate in large flocks; others go one by one; and still others travel in families, calling to keep their little groups together. In most species, young birds are independent of their parents by migration time, and must find their way south on their own or with other inexperienced youngsters.

Still, billions of birds make the migration each year--but whether they can survive when they arrive at their destinations will depend on what people do. Bird experts agree that a coordinated international program is needed to conserve neotropical birds. The program launched with the May 14th agreement will include such steps as improving surveys and monitoring bird populations; conducting research on the habitat needs and causes of decline for various species; identifying essential habitat areas; and developing habitat conservation and management techniques. Of particular importance are efforts to aid

Legislative Update. *Continued*

Caribbean and Central and South American countries--many of which are working to develop conservation programs that can succeed in the face of serious human economic and population pressures.

In North America, the government agencies plan on increased efforts to manage and conserve bird habitats in forests, parks and refuges. Many of the species need large tracts of forestland or benefit from corridors that connect one wooded tract to another.

>Department of Interior News Release, May 15, 1991



Publications Available

We have been notified of the availability of the following publications and information on each is printed here as a service to the membership. Publication of this information does not imply endorsement on the part of AAZK or Animal Keepers' Forum.

Research & Exploration, is the National Geographic Society's peer-reviewed, scholarly quarterly. In addition to articles presenting fieldwork, methodology and application, this publication's flexible format includes commentary and rejoinder, opinion essays, and reviews of this year's books. Its format is designed to bridge disciplinary boundaries and stimulate genuine communication among scientists. Individual and Institutional subscription rates available. For more information contact: National Geographic Society, P.O. Box 1111, Washington, DC 20013-9990 U.S.A.

The Maintenance of Insectivorous Bats in Captivity (by AAZK member Susan M. Barnard) is an informative text for anyone caring for bats in captivity. In addition to successful methods for hand-raising baby bats, contents include information on using bats for demonstrations, as well as handling, exercising, housing, feeding, transporting and rehabilitating them. Also included is a section on medical and necropsy considerations. REVISED ANNUALLY; 70 pp; 45 illus. Prices quoted in U.S. dollars and include postage and handling: U.S. \$5, Canada \$5.50, other countries \$7 surface rate or \$12 air mail. Available from Susan M. Barnard, 6146 Fieldcrest Dr., Morrow, GA 30260, U.S.A.

Peterson Field Guides

Rocks and Minerals - a simplified field guide to common gems, ores, and other rocks and minerals. Illustrated with 175 color photographs and 12 line drawings. Also includes tips on collection. Written by Frederick H. Plough, formerly curator of mineralogy at the American Museum of Natural History. Price: \$4.95 paper.

Clouds and Weather - a pocket-sized atlas of the sky which includes over 100 color photos, line drawings and simple diagrams along with a concise text illustrating and explaining the myriad forms of clouds, why the sky is blue, what causes rainbows, etc. Also introduces environmental issues that affect the atmosphere such as global warming, acid rain and ozone depletion. Written by John A. Day and Vincent J. Schaefer. Price: \$4.95 paper.

Freshwater Fishes - is the first and only guide to cover all 790 species found in North America north of Mexico, from Sturgeons and salmon to minnows and darters. For each species the field marks, habits and habitats are presented and there are over 700 illustrations and nearly 400 detailed maps. Written by Lawrence M. Page, ichthyologist with the Illinois Natural History Survey and Brooks M. Burr, Southern Illinois University teacher. Price: \$15.95 paper or \$24.95 cloth.

The above field guides are available at your local bookstore or may be ordered from the publisher Houghton Mifflin Company, 215 Park Avenue So., New York, NY 10003.



Audio Review

Notice of the availability of the following audio tapes has been sent to our offices. Information on them is presented here as a service to the membership and does not imply endorsement by AKF or AAZK.

Backyard Bird Song (Peterson Field Guides) Experienced birders can identify a bird by its voice alone. Now Backyard Bird Songs by Richard K. Walton and Robert W. Lawson, with a foreword by Roger Tory Peterson, introduces the average listener to the distinctive calls and songs of the most familiar birds. The narration for this one-hour audiocassette tells how to distinguish one species from another. Similar in approach but smaller in scope than the popular Birding by Ear, this single audiocassette includes species common to treetops, telephone wires and bird feeders across the country. The accompanying 32-page booklet includes illustrations of all the birds and gives detailed descriptions of their songs and calls. Price: \$19.95. Available from Houghton Mifflin Company, 215 Park Ave. So., New York, NY 10003.

The Narada Wilderness Collection Released in 1990, this collection is a treasury of specially-commissioned instrumental songs by 17 artists. This album, whose titles include Sahara Sunrise, Fragile Majesty, White Water and Return to Emerald Forest, celebrates the wilderness and the pristine places still left in nature. Narada is donating a portion of the proceeds from this collection to three environmental groups: National Audubon Society, Sierra Club and The Wilderness Society. This collection of relaxing and spirit-restoring music is available on both cassette and compact disc. The compact disc edition includes a 40-page photo booklet featuring the works of numerous renowned outdoor photographers as well as state-of-the-wilderness essays written by representatives of the three aforementioned environmental groups. The Narada Wilderness Collection, like the places that inspired it, has a serenity to it that is accessible to listeners of many tastes. It is available at most record stores, or by calling Narada at (414) 272-6700.



World Wildlife Fund Conservation Award



World Wildlife Fund is requesting nominations for the 1991 Conservation Recognition Award to be presented to an AAZK Chapter for its contributions to conservation. The selection will be based on the significance and impact of the Chapter's conservation project(s). Nominations should include a description of the project(s) along with reports, articles, press clippings, etc., that the project(s) produced. These projects can encompass education, research, or fund-raising for conservation activities. The nominated project(s) should be AAZK Chapter initiated and supported.

Please submit nominations to: *Rich Block, Director of Public Programs*
World Wildlife Fund
1250 24th Street, N.W.
Washington, DC 20037

The deadline for submitting nominations is 30 August 1991

A Puzzle Feeder for Orangutans

(Environmental Enrichment Report No. 3)

By

Sarah Seymour and David Shepherdson
Zoological Society of London, Regent's Park
in association with the
Universities Federation for Animal Welfare

In common with other great ape species, Orangutans (*Pongo pygmaeus*) are highly intelligent animals and need sufficient mental stimulation within their captive environment to prevent boredom. Environmental enrichment for orangutans has received less than its fair share of attention in the literature when compared with that for chimpanzees (*Pan troglodytes*) and gorillas (*Gorilla g. gorilla*). Orangutans are relatively asocial in the wild, are not great tool users (1) and have great strength. These characteristics make enrichment for orangutans more of a challenge than for many other species.

However, in contrast to their behavior in the wild, captive orangutans show a considerable capacity for social behavior (2) and are proficient tool-users, often to the detriment of their structural surroundings. Manipulable objects (3), social companions (2) and activity food (4) have all been successfully used to enrich orangutan environments. Puzzle feeders to stimulate manipulative and cognitive skills have been used successfully with chimpanzees (5,6,7) and gorillas (8). The aim of this project was to design and evaluate a simple puzzle feeder for orangutans.

Materials and Methods

The puzzle feeder consisted of a box frame, meshed on both sides, containing three shelves, each with a series of holes of varying sizes from 2.5cm to 7.5cm diameter (Fig. 1). To encourage the orangutans to climb, the puzzle feeder was attached to the wire mesh of the enclosure a meter above the ground. Food items were placed on the top shelf and the orangutans were supplied with lengths of bamboo with which they could move the food along the shelves, through the holes, to the bottom of the puzzle. Once at the bottom, the food could be reached since the mesh stopped 12cm above the base of the puzzle.

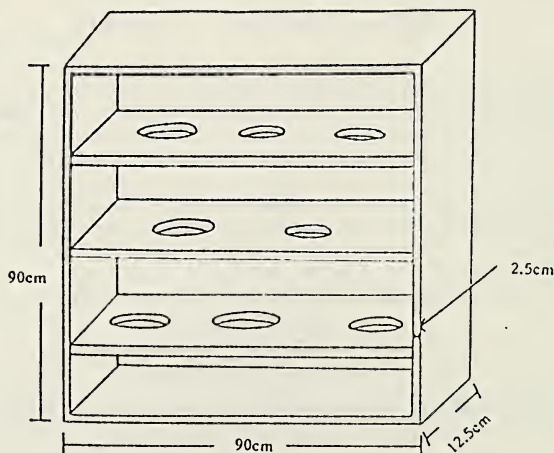


Figure 1: Puzzle Feeder - Mesh: 2cm x 2cm on cage side stopping 12cm above base; 8cm x 8cm on loading side.

Orangutan Puzzle Feeder, Continued

Behavioral Observations

The study group consisted of two adult females (ages 27 & 12 yrs. respectively), one male (age 8) and two females (aged 9 & 6). All except the eldest female were captive-born. Behavioral categories were recorded on check sheets using instantaneous scan sampling (9) at 10 second intervals. Twenty-one 40 minute observation sessions totaling 14 hours and 40 minutes were recorded over a period of 3 months. The first 20 minutes of each observation session were used as a control. Food was then placed in the feeder and observations continued for a further 20 minutes.

Results

The puzzle feeder was used constantly until all the food had been consumed (up to one hour). It resulted in increased activity and greater use of the outside enclosure (from 46% when the puzzle was not in use, to 66% when the puzzle contained food). Figure 2 is a typical example of how the orangutans' activity was altered by the feeder. There was no evidence that the puzzle feeder became less effective with time over the study period.

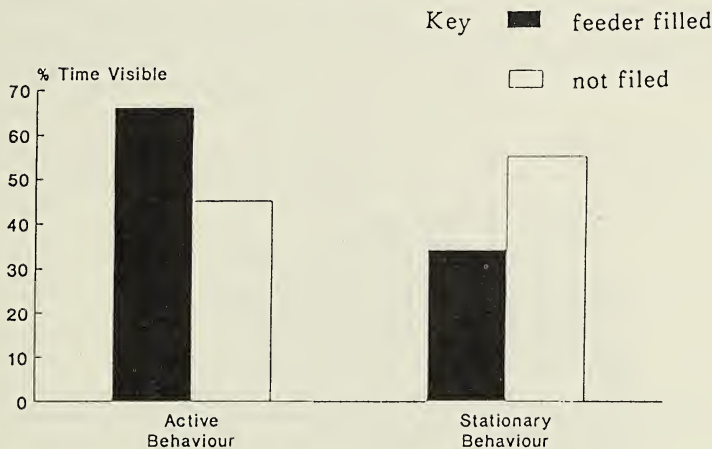


Figure 2: Orangutan 'Bella'

Conclusion

The use of this simple puzzle feeder for captive orangutans resulted in increased levels of activity and greater use of the outside enclosure. Each animal developed an individual technique for obtaining food items, some showing more persistence and adeptness with tools than others. However, dominance within the group affected individual access to the puzzle, therefore provision of more than one type of device per enclosure is recommended. Overall the device was cheap and easy to make and install, and provided a practical and effective form of environmental enrichment for orangutans. It seems likely that it would be effective with other great apes also.

References

1. Galdikas, B.M.F. 1982. Orangutan tool-use at Tatung Puting Reserve, Central Indonesian Borneo. *Journal of Human Evolution* 10:19-33.
2. Poole, T.B. 1987. Social behavior of a group of orangutans (*Pongo pygmaeus*) on an artificial island in Singapore Zoological Gardens. *Zoo Biology* 6:315-333.

Orangutan Puzzle Feeder, Continued

3. Wilson, S.F. 1982. Environmental influences on the activity of captive apes. *Zoo Biology* 1:201-209.
4. Tripp, J.K. 1985. Increasing activity in orangutans: provision of manipulable and edible materials. *Zoo Biology* 4:225-234.
5. Bloomstrand, K., Riddle, K., Alford, P., Maple, T.L. 1986. Objective evaluation of a behavioral enrichment device for captive chimpanzees. *Zoo Biology* 5:293-300.
6. Murphy, D.E. 1976. Enrichment devices for orangutans and chimpanzees. *International Zoo News* 137:24-26.
7. Cole, M. 1987. How we keep our gorillas occupied. Proceedings of the 13th National Conference of the AAZK. *Animal Keepers' Forum (Special Edition)*: 401-403.
8. Shepherdson, D.J. 1988. The application of behavioural enrichment in zoos. *Primate Report* 22:35-42.
9. Martin, P., Bateson, P. 1986. *Measuring behaviors*. Cambridge University Press; Cambridge.

Acknowledgments

Thanks are extended to the staff of the Sobell Pavilion for Primates, Allan Alder, Jo Gripps and John Stevens for their help and encouragement, and to Dilys Rose of UFAW for editing the material.



For further information about UFAW you may write:

Universities Federation for Animal Welfare
8 Hamilton Close, South Mimms, Potters Bar,
Herts EN6 3QD United Kingdom



Update on Zoo Infant Development Project

Submitted by
Harmony Frazier -Taylor
Project Coordinator
Woodland Park Zoo, Seattle, WA

Following you will find a list of all the current completed ZIDP forms, their zoos, and the contributors.

I thought it might be helpful for you to see where the project currently stands. We have a good start but it's only a start. We need a great deal more species variety as well as same species/different zoos, to get a complete picture.

Many of the completed forms have been done by the same contributor. I want to thank all those who have contributed so far. It is greatly appreciated. I have found it very encouraging. But, we do have a way to go before we will be able to publish a usable and useful manual.

I need your help. The spring and summer birth seasons are upon us. ONE form completed by each AAZK member would complete this project THIS YEAR! Only ONE each! About 45 minutes of your time looking through your records or a few minutes a week listing new developments as they occur is all that's required. Either way works.

Please help make this project, YOUR AAZK Zoo Infant Development Project, a success. If I can be of ANY assistance or send you data collection forms please don't hesitate to write or call.

Harmony Frazier-Taylor
Woodland Park Zoo
5500 Phinney Ave. N.
Seattle, WA 98103
(206) 684-4866

Species List Submitted for Infant Development Project as of 11 April 1991. Prepared by Harmony Frazier-Taylor, LVT, Woodland Park Zoo, ZIDP Coordinator. TOTAL: 117

<u>SPECIES</u>	<u>NUMBER</u>	<u>INDIVIDUAL</u>	<u>ZOO</u>
Red-necked Wallaby (<i>Wallabia rufogrisea</i>)	1	Carolann Curry	Mill Mt. Zoo, VA
Wallaroo (<i>Macropus robustus</i>)	3	Tina Mullett	Woodland Prk Zoo, WA
Wallaroo (<i>Macropus robustus</i>)	1	Cheryl Clark	Woodland Prk Zoo, WA
Matschie's Tree Kangaroo (<i>Dendrolagus matschiei</i>)	3	Tina Mullett	Woodland Prk Zoo, WA
Grey-headed Fruit Bat (<i>Pteropus poliocephalus</i>)	4	*Pam Talbot *=from nocturnal	Woodland Prk Zoo, WA crew records, WPZ
Straw-colored Fruit Bat (<i>Eidolon helvum</i>)	7	*Pam Talbot	Woodland Prk Zoo, WA
Ring-tailed Lemur (<i>Lemur catta</i>)	3	Patty Pearthree	Indianapolis, IN
Mouse Lemur (<i>Microcebus murinus</i>)	6	*Pam Talbot	Woodland Prk Zoo, WA

Zoo Infant Development Project Update, Continued

Greater Galago (<i>Galago crassicaudatus</i>)	7	*Pam Talbot	Woodland Prk Zoo, WA
Lesser Galago (<i>Galago senegalensis</i>)	5	*Pam Talbot	Woodland Prk Zoo, WA
Slow Loris (<i>Nycticebus coucang</i>)	1	*Pam Talbot	Woodland Prk Zoo, WA
Douroucouli (<i>Aotus trivirgatus</i>)	3	*Pam Talbot	Woodland Prk Zoo, WA
Black & White Colobus (<i>Colobus guereza</i>)	1	Jo Abbott	Woodland Prk Zoo, WA
Colobus (<i>Colobus guereza kikoyensis</i>)	1	Dave Ackerman	Columbus Zoo, OH
DeBrazza Guenon (<i>Cercopithecus neglectus</i>)	1	Jo Abbott	Woodland Prk Zoo, WA
Japanese Macaque (<i>Macaca fuscata</i>)	2	Patty Pearthree	Indianapolis, IN
White-handed Gibbon (<i>Hylobates lar</i>)	1	Patty Pearthree	Indianapolis, IN
Tamandua (<i>Tamandua tetradactyla</i>)	3	*Pam Talbot	Woodland Prk Zoo, WA
Tamandua (<i>Tamandua tetradactyla</i>)	1	Pat Sammarco	Lincoln Prk Zoo, IL
Two-toed Sloth (<i>Choloepus hoffmani</i>)	10	*Pam Talbot	Woodland Prk Zoo, WA
Coendu (<i>Coendu prehensilis</i>)	1	*Pam Talbot	Woodland Prk Zoo, WA
African Crested Porcupine (<i>Hystrix galeata</i>)	1	*Pam Talbot	Woodland Prk Zoo, WA
Chinchilla (<i>Chinchilla langier</i>)	1	Patty Pearthree	Indianapolis, IN
Chinchilla (<i>Chinchilla langier</i>)	1	Luanne Johnson	Indianapolis, IN
Patagonian Cavy (<i>Dolichotis patagonum</i>)	1	Dave Ackerman	Columbus Zoo, OH
Springhaas (<i>Pedetes capensis</i>)	1	*Pam Talbot	Woodland Prk Zoo, WA
Malayan Sun Bear (<i>Helarctos malayanus</i>)	1	Bill Fagerland	Woodland Prk Zoo, WA
Sloth Bear (<i>Melursus ursinus</i>)	4	Joyce Ford	Little Rock, AR
Red Panda (<i>Ailurus fulgens fulgens</i>)	1	Carolann Curry	Mill Mt. Zoo, VA
Red Panda (<i>Ailurus fulgens</i>)	8	*Pam Talbot	Woodland Prk Zoo, WA
Siberian Tiger (<i>Panthera tigris altaica</i>)	1	Patty Pearthree	Indianapolis, IN

Zoo Infant Development Project Update, *Continued*

Siberian Tiger (<i>Panthera tigris altaica</i>)	1	Carol Lent	Indianapolis, IN
Lion	1	Patty Pearthree Dave Ackerman	Columbus Zoo, OH
Tree Hyrax (<i>Dendrohydrax arboreus</i>)	1	*Pam Talbot	Woodland Prk Zoo, WA
Southern White Rhinoceros (<i>Ceratotherium simum simum</i>)	10	Betty Grogan	Jacksonville, FL
Guanaco (<i>Lama lama guanicoe</i>)	1	Cindy Ambrosio	Bergen County Zoo, NJ
Red Brocket Deer (<i>Mazama americana</i>)	1	Cindy Ambrosio	Bergen County Zoo, NJ
Reeves Muntjac (<i>Muntiacus reevesi</i>)	5	Patty Pearthree	Indianapolis, IN
Reeves Muntjac (<i>Muntiacus reevesi</i>)	1	*Pam Talbot	Woodland Prk Zoo, WA
Reticulated Giraffe (<i>Giraffa camelopardalis reticulata</i>)	5	Dave Ackerman	Columbus Zoo, OH
Pronghorn (<i>Antilocapra americana</i>)	1	Dave Ackerman	Columbus Zoo, OH
Gemsbok (<i>Oryx gazella</i>)	1	Dave Ackerman	Columbus Zoo, OH
Domestic Cotswald Sheep (<i>Ovis aries</i>)	2	Jeanie Ragland- McMahan	Woodland Prk Zoo, WA
+Snow Leopard (<i>Panthera unica</i>)	1	Belinda Galvin for: Martin Zyburra,	Santa Fe CC, FL Bronx Zoo, NY
+Mandrill Baboon (<i>Papio sphinx</i>)	1	Belinda Galvin for: Jill Hickey, Reid Prk Zoo, Leslie Wood	Santa Fe CC, FL AZ

+ = need permission

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Red River Hogs

(*Potamochoerus porcus*)

submitted by
Robin Parker, Animal Keeper
Los Angeles Zoo, Los Angeles, CA

What belongs to the pig family, has a coat of red bristly hair and long, pointed, elf-like ears? The Red River Hog, of course.

On 28 December 1991, the Los Angeles Zoo received a pair of Red-river hogs. Currently there are only three individuals of this species in the U.S. San Diego Zoo owns one female, while the Los Angeles Zoo owns one pair. The male, Tongo, will reach a weight of about 250 pounds, while the female, Ruby, will weigh about 150 pounds when fully grown.

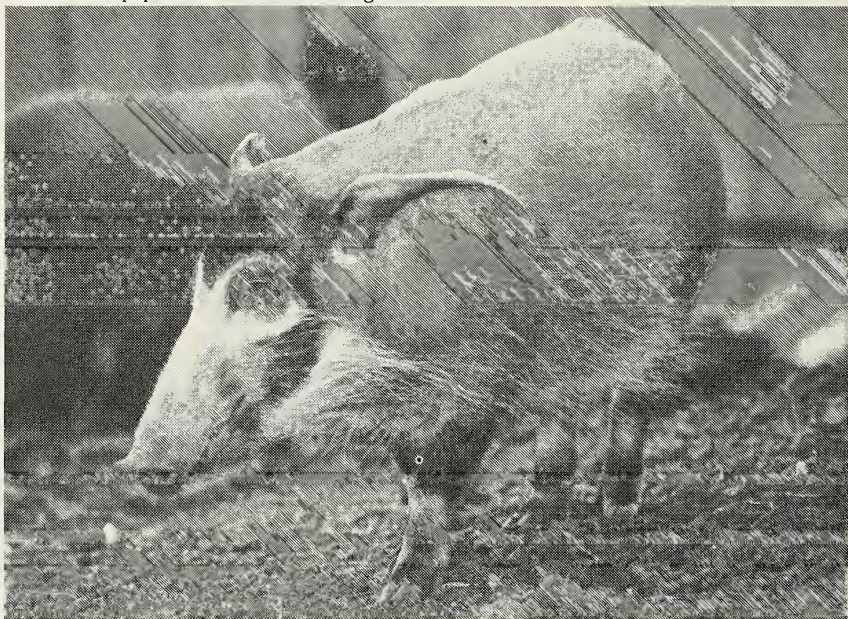
The pair is currently housed off-exhibit. After some enclosure modifications are complete, they will be moved on exhibit where the public will be able to enjoy them. They will eventually be housed in the exhibit next to the Arabian oryx.

The pair are quite calm around people and will allow keepers to scratch them through the fence. The female will allow keepers to enter the exhibit with her, but the male is unpredictable and therefore can be dangerous.

They enjoy a diet of pig chow, versaline, and various fruits and vegetables. Corn-on-the-cob and bananas are their favorites. They also enjoy rooting in the soil for various insects and grubs.

In the wild the Red river hog is found on the lower part of the African continent. They live in bushy woodlands and along forest edges. They are mainly nocturnal and can be a pest to farmers.

Although Tongo and Ruby are young, it is hoped that they will begin breeding soon and increase the population of Red river hogs in the U.S.



This species of hog has a coat of red bristly hair and long-pointed elf-like ears. Photo ©Tad Montoyama.

Basic Animal Husbandry - Health Considerations: Some Implications for Developing Nation Zoos and Breeding Programs for Endangered Species

By
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Florida Museum of
Natural History
& Graduate School
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Veterinary Medicine
Teaching Hospital
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Gainesville, Florida

In April of 1988 *Animal Keepers' Forum* published our article on basic animal husbandry techniques in Brazilian zoological parks highlighting the animal husbandry programs being practiced in Brazil's zoos. At that time our concerns dealt with understanding and documenting the existing levels of care in these Brazilian settings. In August of 1988 we returned to Brazil to continue working with the staff of the Parque Zoobotanico of the Museu Paraense Emilio Goeldi. During our eight-month stay we were able to gain further insights into some of the management problems being addressed by zoos in developing areas of the country. One rapidly changing area is the growing interest in many U.S. and European zoological parks in acquiring specimens from this part of the world. Interest in developing breeding programs for endangered species within Brazil is growing as well due to increased local support and awareness as well as increased international support for these types of activities. This article, however, will attempt to provide further insights into an animal health related issue that has become an increasing concern of scientists in the conservation field as a whole.

In March of 1988 the journal *Conservation Biology* dedicated part of its issue to articles dealing with disease and infection and their implications for conservation. Robert May in his introduction to this subject area (1988, p. 28) aptly suggests that "...in developing countries we have come to believe a life free from any serious effect of viral, bacterial, protozoan or helminth infections is a natural state..." Furthermore he wonders why ecologists have paid "so little attention to the way diseases may affect the distribution and abundance of other animals and plants" (May, 1988, p. 28). In closing his introduction he highlights the fact that although this area of concern is finally being addressed, it is further complicated by the more political human/livestock disease control programs. Questions as to the impact and control of disease on preserves, reserves, and wildlife management programs remain unanswered and perhaps unaddressed.

In the early 1980's during our work with the Dusky Seaside Sparrow, a priority consideration in the management plan was the provision of sufficient funding to develop baseline information for the adequate care of the five remaining birds. Of constant concern was our situation of not having any information from the field on the diseases and general biology of this particular species. This example points to what should be a major concern today in species management. Once a species reaches a limited population level it becomes difficult if not impossible to study specimens through tissue/fluid sampling, observation, extensive handling and through sacrifice. Modelling does provide a certain amount of information, however, it cannot substitute entirely for having species specific information. With the rise of international training programs for both wildlife and zoological park management personnel we are wondering as to whether disease/infection aspects are being appropriately addressed.

Experience in U.S. zoos has demonstrated that preventative medicine, quarantine, and treatment of captive animals has reached a sophisticated level of understanding. We are also aware that in the U.S. and most of the developed nations sophisticated technical and support facilities have become almost common. On the other hand, in developing countries a number of fundamental problems exist which will continue to hamper species

Basic Animal Husbandry-Health Considerations in Developing Countries.

Continued

management if infrastructural support and assistance is not provided. In the following account of the loss of 21 Golden Conures (*Aratinga guarouba*) at the Museu Goeldi we hope to further highlight the difficulties that must be dealt with in all species management programs in developing nation settings.

In October of 1988, 19 golden conures (or golden parakeets) were brought to the Museu Paraense Emilio Goeldi, Belem, Brazil by the Federal Police who had confiscated the animals from a wildlife trafficker. The trafficker also had *Saguinus midas niger*, a large number of native parakeets and was expecting a shipment of over 100 *Geochelone sp.* and *Podocnemys sp.* The latter were never confiscated as the boat coming down river was apparently warned of an impending raid. Also the police never found the remainder of the conure shipment which they were told consisted of over 200 birds. All of the psittacines appeared to be adults and had their wing feathers trimmed so that they could not fly. All of the confiscated animals appeared to be wild-caught although no specific information as to their source was ever ascertained.

Attempts to refuse such animal donations have been ongoing since the Museu began remodeling its exhibits and animal management areas; however, due to the nature of this donation, these animals were accepted. The Federal Police felt that the Museu's facilities, although undergoing remodeling, were the best in Belem especially for these threatened animals. Unfortunately, the permanent quarantine holding area was undergoing a total reconstruction. This led to a decision to place the golden conures and parakeets into aviaries in the main park area. The golden conures were placed in a vacated exhibit; the other psittacines were introduced into an existing mixed group display. The exhibits were designed to somewhat contain disease outbreaks via separation of exhibits from each other and through the use of keeper entry and prophylactic procedures. Disease questions were raised; however as the staff had no experience with disease management or outbreaks the most common procedure of placing animals into the collection was followed. It is key to note here that animal deaths occurred year-round in many species; however the constant flow of incoming animals relieved much of the pressure on having to determine the causes of these deaths. At the Museu most avian deaths are attributed to stress, pests (such as rats) and dietary factors. The case of the golden conures however highlighted other contributing factors such as the absence of or extremely limited laboratory services and the costs involved in these procedures.

Dietary problems arose from the start as all of the birds were accustomed to papaya/mamau which is common in northern Brazil. All attempts to transfer the birds to a more balanced diet of commercially available dog food and fruits failed. Diarrhea was noted early on in the birds as was low body weight and a voracious appetite. At no point did the birds present any symptoms of lung or sinus problems.

Early treatment by the staff veterinarian included administering vitamins in the water and food as well as antibiotic/anthelmintic therapy (Neosulmetina/Flagyl) for what was thought to be coccidiosis and giardiasis. In house gross necropsies of the first three deaths indicated some enteric abnormalities. Treatment with teramycin in the water was initiated due to a suspected bacterial problem with treatment being discontinued at seven days. These early diagnoses were based on limited in-house laboratory analyses. Following this last treatment, efforts were continued to transfer the animals to a more balanced diet. Weight gain continued to be difficult to monitor although most animals appeared to be eating voraciously when food was presented, generally eating only the fruits and papaya in particular. Deaths began to occur early in November and by this time we had established firm contacts with the local medical reference lab for support.

Cloacal bacterial and fungal cultures were taken of the more distressed specimens to the Instituto Evandro Chagas, the national medical reference laboratory located in Belem. Results from these tests indicated the presence of *Escherichia coli* and *Candida sp.* Treatment initiated by the staff veterinarian included the use of both chloramphenicol in drinking water and oral nystatin.

Basic Animal Husbandry-Health Considerations in Developing Countries.

Continued

Fecal cultures were then done on all other birds once the potential for a gram negative bacterial problem was discovered and all birds cultured positive for gram negatives. Equally *Candida* sp. appeared in a number of stool specimens cultured. Treatment with sulfa drugs (Bactrim) was initiated both orally in half the group and injectable in the more ill specimens. Isolation in the quarantine area was also instituted for these birds. Treatment with the sulfa drugs appeared to be improving the situation however, within ten days following treatment, the birds began to weaken and die. Weight never improved on any of the specimens and appetite always appeared to be very hardy. Fecal cultures continued to return with gram negative coliform results. Also *Candida* continued to appear, however only in one or two specimens. It was suspected throughout the latter part of treatment that there was an underlying cause to this disease process and work with the Instituto Evandro Chagas heightened. Cultures for psittacosis and potential viral agents were requested, however it was not until February that the reference lab discovered that no one in Brazil had the capability of doing the appropriate lab studies for psittacosis. A check of local laboratories confirmed the absence of materials for the procedures. By February the reference lab had been able through virological screening procedures to determine that the agent had viral characteristics. Further tests also showed it was transmissible to other psittacines and to species such as Aracari's. Unfortunately by this time all but two specimens had died.

In mid-April a confirmed diagnosis of psittacosis was received for several of the birds. This test report was received from a cooperating reference lab in the United States which works with the Instituto Evandro Chagas. Blood work on the staff to determine exposure was taken following this result, however those results would not be ready until such time as the blood could be sent Stateside. Locally available tests for *Chlamydia* could not be relied upon because they were only available for the human venereal disease (*Chlamydia trachomatis*).

We should note that potential sources for contamination by coliforms include the city water distribution system which often has breaks and routinely reports contamination throughout the city. The use of elevated private water tanks/towers and cisterns is common throughout all areas of the city as without these water pressure would be limited at best. These tanks in some cases are not washed but once a year if at all. Well systems in zoos appear to be common and contamination of these water supplies also appear to be the cause as occurred at the Museu. Other sources of potential hazard include the fact that the majority of Belem was not hooked up to a central sewer system. Overflow from septic systems runs along the curbs into storm drain systems which drain into the rivers. These storm drains often had water pipes running under or near the drain grates. Soils used in exhibits are often brought from suburban sources and being aware of the lack of sanitary systems raises the question of potential contamination. Obviously a major source of disease is the large number of incoming animals. Preliminary screening of a few animals in-transit from the hydroelectric dam project at Balbinas in Manaus indicated at least for primates unidentified microfilaria in the bloodstream, numerous intestinal parasites and titers to diseases such as yellow fever. As little is known about naturally occurring viral diseases in the Amazonian wildlife this should always be of concern with respect to incoming wildlife. The distribution of wildlife throughout the country to zoological parks and research institutions as well as to museum collections as part of the rationale for wildlife rescues is then brought into serious question.

Fruit eating bats and birds congregate in large numbers throughout the city due to the large number of mango as well as other native fruit trees. Feral domestic animals such as dogs and cats are a major problem as well even though there are intensive yearly vaccination campaigns. Other somewhat unrelated problems yet critical aspects for breeding programs involve the quality of food sources. Mercury in the Amazonian ecosystem has become a serious threat to human health as well as to wildlife. Its indiscriminate use in gold mining has led to a national ban on its use, however enforcement is difficult. Fishes from local markets are usually fed to species such as giant river otters, river turtles, etc. The levels of mercury as well as other unidentified chemicals such as pesticides should be of extreme concern. Those of us working in developing countries should also remember that

Basic Animal Husbandry-Health Considerations in Developing Countries.

Continued

although many chemicals are banned for use in the U.S. their transport and sale to foreign countries is not restricted and often encouraged. Brazil has banned the use of most agrototoxic chemicals over the past years, however this ban will only go into effect when local supplies are depleted or when its use in other neighboring countries is banned.

Throughout this entire episode it was evident that the diagnostic procedures available at least in the more rural areas of the country and possibly the larger cities were limited. The national reference lab with which we worked had contacts throughout the country and was unable to locate the needed test. Even if available the time lag between initiation of the test and results would have prevented adequate early treatment. The lack of literature and information on psittacosis within Brazil was somewhat surprising. A number of southern zoos contacted routinely treat all entering psittacines with tetracyclines, however all were unable to provide us with contacts for laboratory diagnostic work. Awareness of the occurrence of both this disease as well as other diseases in Brazilian psittacines was lacking. As most birds are coming in from the wild, questions as to naturally occurring viruses, enteric flora, etc. can be raised however little to no information is available. The frustration with respect to the lack of these support services is evident throughout the profession. More frustrating however is the realization that even if these services were available, they would in all likelihood be too costly for most zoos. Routine lab exams are roughly similar in cost to those in the U.S., however minimum wage was approximately U.S. \$67.00/month. With an inflation rate of roughly 30% per month these costs are bound to worsen. Another aspect is the fact that apparently many of the laboratory supplies needed for cultures come from the U.S. A discussion with a local laboratory manager brought out the fact that her lab had ordered the materials to do many of the cultures we needed, however they were still waiting three months later and had no way of even predicting when the supplies would arrive. Obviously when they did the costs would be even greater for the services.

The occurrence of psittacosis in the general human population of Brazil does not appear to be well documented. A large number of households at least in Belem have psittacines as pets. Psittacines are commonly available at the local market places. Often these individuals are juveniles and kept with a wide range of birds, mammals and domestic animals such as rabbits, hamsters, mice, etc. The reference lab maintains on the outskirts of the city a monitoring system (sentinels) for diseases, however there is little control of the riverside market places. Although strongly interested in wildlife diseases, the reference lab was economically limited in the range of their work as are most other government institutions. With a runaway inflation rate of over 900% a year, the ordinary citizen is daily concerned with food costs, suitable housing, salaries, etc. and less concerned with wildlife problems much less environmental problems. This is not to say that the concern is not there; however one's ability to actively pursue these activities is severely hampered. During the early part of the year (and lasting 3 months) the Museu was threatened with a 50% cut in staffing which would have closed the major research institution in Brazil actively pursuing Amazon research activities. These same cuts were also to be applied across the board to all other institutions including health related facilities. Although eventually these cuts took other forms, the simple daily pressures of not knowing what will happen takes its toll on all activities.

Successful wildlife breeding programs do exist on a very limited basis within Brazil and the development of new ones are waiting to come alive as conditions improve. On the other hand education programs (specifically environmental and conservation ones) which often are considered as secondary to the breeding programs are showing potential strengths and benefits and are beginning to grow in almost all communities. The Museu's efforts to build a unique regional education program are in their infancy and growing through the support of the Ford Foundation (U.S./Brazil). Their efforts to create an environmental ethic in the local grade school children as well as the community is being well received. It is in these programs that we continue to see a very valuable resource for today as well as the future. There is a strong recognition that the Amazon and its cultures are a heritage to be conserved and preserved for the future.

Acknowledgments

We would like to gratefully thank the Museu Paraense Emilio Goeldi, the Instituto Evandro Chagas, and the Conselho Nacional de Pesquisas (CNPq) of Brazil for their support of our work. In particular we wish to acknowledge the help of Zea C. Lins, Dr. Amelia Travassos da Rosa, Antonio Carlos Lobo Soares, Antonio Messia Costa DVM, and all of the keepers and staff of the above mentioned institutions.

Literature Cited

- Ellis, Jim. (1988) Basic Animal Husbandry in Brazilian Zoological Parks.
Animal Keepers' Forum. April: 122-128.
- May, Robert M. (1988) Conservation and Disease. *Conservation Biology* 2(1):28-30.

For added reading:

- Scott, Marilyn E. (1988) The Implications of Infection and Disease on Animal Populations: Implications for Conservation Biology.
Conservation Biology 2(1):40-56.



Another Day at the Zoo

By
Matt Russell
New England Science Center Zoo
Worcester, MA

My name is Matt Russell and I am a teenage volunteer at the New England Science Center Zoo. I belong to a group called the Junior Naturalists, which is coordinated by Chris Rasums. The program consists of about 20 young people between the ages of 12 and 18. We assist the keepers in their daily routine and learn a great deal during the course of a day.

When I go to the zoo at about 0900 hrs. I begin my daily routine. I do such things as preparing diets, hydrating animals, and exhibit maintenance. During the period of a day a Junior Naturalist cleans cages, changes water bowls and observes any behavioral changes in our animal collection.

There are three stages of the program: Trial, Junior Volunteer, and Junior Naturalist. A Trial is the first stage of the program during which the kids are taught the fundamentals such as preparing diets, handling less difficult animals and cleaning exhibits. A Junior Volunteer is higher than a Trial and learns how to handle additional animals under the supervision of the zoo staff. Finally I have reached the last stage of Junior Naturalist. This is the last stop and we are now allowed to handle the more difficult animals in the zoo and we are allowed to assist the keepers in the outdoor zoo. Becoming a Junior Naturalist is a long task, but well worth it. I enjoy all of my time at the zoo and am glad to be a part of the AAZK.

Officers for our Junior Naturalist Program are: President - Chip Ingraham; Vice Pres - Tiffany Mozer; Secretary - Brent Broszeit; and Treasurer - Stacey Gardell. If you have any questions about our program, feel free to write to me at this address: Matt Russell, c/o New England Science center, 222 Harrington Way, Worcester, MA 01602.



L.I.N.K.
(Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 889-2919 [h].

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or Wendy Davis, Lake Superior Zoo, 7210 Fremont St., Duluth, MN 55807

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Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-272-2539.

EXPERIENCED GREAT APE KEEPER... full-time position available with a non-profit research foundation to assist in ongoing research. Unique opportunity to work with gorillas. Responsibilities include: care and maintenance of animals, food preparation, hands-on cleaning, data collection and tallying, record keeping and general office work. This individual must be able to work closely and effectively with a variety of individuals. This position is full-time (40 hours) with a work week that includes both Saturday and Sunday. We desire someone who is alert, animal oriented, aware/perceptive of people as well as animals, hard-working, able to follow instructions, possessor of good judgement and initiative and career-oriented. We are seeking an experienced great ape keeper and an entry level individual (each possessing a stable track record) to join our staff. American Sign Language experience preferred but not required. Salary will be commensurate with qualifications and experience. Please send letter of interest, resume and salary requirements to: Dr. Francine Patterson, Box 620-530, Woodside, CA 94062.

ZOOKEEPER (4 Positions)...strong husbandry background essential in one of the following fields - Hoofstock, Primates and Cats. Duties include but not limited to daily care, feeding, enclosure cleaning and maintenance, and record keeping of animals. Salary \$16,000. Resumes accepted until positions are filled. Send to: John Seyjagat, Lube Foundation, Inc., 18401 N.W. County Rd. 231, Gainesville, FL 32609.

The following four (4) positions are open at the El Paso Zoo., City of El Paso, TX. Deadline for inquiries is 26 July 1991. For further information and application materials, please contact: Linda Thomas, Personnel Dept., City of El Paso, 2 Civic Center Plaza, El Paso, TX 79901-1196, phone (915) 541-4102. AA/EOE.

ZOO KEEPER... (Salary: \$15,164.50 - \$17,422.34 annually). Completion of high school or GED and one year experience in the care of caged animals; or an equivalent combination of training and experience.

ELEPHANT SUPERVISOR... (Salary \$17,422.20 - \$20,496.84 annually). Graduation from high school or GED, and four years' experience in the care of zoo animals including elephants and the maintenance of cages, enclosures, grounds and service areas; including two years' exclusive experience in the care and handling of several different elephants; or an equivalent combination of training and experience.

GRAPHICS/EDUCATION SPECIALIST... (Salary \$22,128.60 - \$27,725.10 annually). Graduation from an accredited college or university in education, fine arts, mass communication, commercial art, graphic design, advertising or related field and two years' experience in written, visual and pictorial information techniques; or an equivalent combination of training and experience.

ANIMAL DIETS SPECIALIST... (Salary \$18,121.22 - \$21,364.98). Associate degree or two years' equivalent education from an accredited college or university in animal husbandry, nutrition or related field and two years' experience in animal care involving nutrition of domestic and/or exotic animals; or an equivalent combination of training and experience.

CHIMPANZEE BREEDING COLONY/ASSISTANT COLONY MANAGER... works directly under Colony Director. Supervises and works with caregivers. Requires chimpanzee experience and ability to work well with others. Some computer experience is desirable. Must be willing to sign a three-year contract. Must have a negative T.B. skin test, negative hepatitis B surface antigen test, and evidence of a measles booster or natural disease prior to employment. Salary negotiable. EOE. Excellent benefits. Send letter of interest (with required salary), resume, and three letters of reference to: Jo Fritz, Director, Primate Foundation of Arizona, P.O. Box 86, Tempe, AZ 85280.

Opportunity Knocks, Continued

AREA SUPERVISOR...responsible for the supervision of the bird/reptile section of the zoo, including scheduling, training, record keeping, in-house exhibit renovation and some collection management. Requires five years of zoo animal experience in positions of increasing responsibility. Bachelor's degree, supervisory experience and experience breeding and hand-rearing penguins preferred. Salary commensurate with experience. Send resume by 10 August 1991 to: Wendy Turner, General Curator, Cheyenne Mountain Zoo, 4250 Cheyenne Mountain Zoo Road, Colorado Springs, CO 80906.

HEAD KEEPER/Waters Biome...requires three years' experience in public aquarium exhibition and captive husbandry of aquatic animals (fish, invertebrates, birds, and reptiles). Must be knowledgeable in aquatic filtration systems and water quality measurement/management and have supervisory abilities. Applicant must be team oriented and have highly developed interpersonal skills. Four year degree with animal curriculum or zookeeping degree preferred. Salary \$21,000 to \$27,500. Resume to: Richard M. Hurst, Indianapolis Zoo, 1200 West Washington Street, Indianapolis, IN 46222.



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ANIMAL KEEPERS' FORUM, 635 Gage Blvd., Topeka, KS 66606

Editor-in-Chief: Susan Chan

August 1991
Volume Eighteen
Number Eight

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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This month's cover features a Black-footed or Jackass penguin (Spheniscus demersus) drawn by Grant Tkachuk, a keeper at the West Edmonton Mall in Edmonton, Alberta, Canada. This penguin, named Big Guy, is one of 12 currently in residence at the facility. This species gets its name from the braying sound they make when they vocalize. They are from 25-27 inches in length and weigh from 7.5-16 pounds. They are native to South Africa along the southern and southwestern African Coastal Inlet. Highly gregarious, this species reaches sexual maturity at from 5-7 years of age with breeding season occurring between Feb.-Sept. The female lays 1-2 eggs which are incubated by both parents for 37-42 days. The species is full grown at six months, but does not reach full maturity until two years of age. Their diet consists of fish, squid and crustaceans, but during breeding season the only food found in the stomachs of wild penguins is Cuttle Fish, which they also use to feed their young. They are a threatened species with about 200,000 remaining in the wild. Thanks, Grant!

Scoops

and

Scuttlebutt

BOD Election Results Announced by NEC Chair

The 1991 elections are finally over and the results are in. This year 1433 Professional members were eligible to vote of which 491 returned completed ballots. This is a return of 34%, an increase of 2% over the last election. I am proud to announce the newly elected members of the AAZK Board of Directors for 1992-1995 terms are: Rachel Rogers of the San Diego Zoo, Mark de Denus of the Assiniboine Park Zoo and Ellen Bradfield of Zoo Atlanta.

I would like to congratulate the new Board members on their election and thank the other candidates for running. Lastly, I wish to express my thanks to the many AAZK members who took part in the election (both candidates and voters). If you have any questions concerning the election, you may contact me at Chaffee Zoological Gardens, 894 West Belmont, Fresno, CA 93728. -- submitted by David Luce, NEC Chair.

Elephant Workshop Issues Call for Papers

The 12th International Elephant Workshop will be held in Syracuse, NY from 16-19 October 1991. It will feature papers on all aspects of elephant management including veterinary medicine, public education, administrative oversight of elephant programs, facilities design and construction, management techniques, and research. It will also feature a poster session. Anyone interested in presenting a paper or poster should submit an abstract (200 word limit) by 31 August 1991 to: Chuck Doyle or Don Moore, Elephant Workshop Steering Committee, Burnet Park Zoo, 500 Burnet Park Drive, Syracuse, NY 13204 [phone: (315) 435-8511].

Second Gorilla Workshop Dates Announced

The 2nd Gorilla Workshop will be held 12-15 June, 1992 in Milwaukee, WI. Co-sponsored by the Milwaukee County Zoo and the Zoological Society of Milwaukee County, the workshop will be held at the Hyatt Regency Milwaukee. Topics for discussion and presentation include: behavior, husbandry, research techniques, behavioral enrichment, management, diet, veterinary, exhibit design, education and tourism. The workshop will include a tour of the new gorilla and bonobo facilities which will open in the Spring of 1992. For information regarding registration and paper/poster presentations, contact: Jan Rafert, Curator of Primates & Small Mammals, Milwaukee County Zoo, 10001 W. Bluemound Rd., Milwaukee, WI 53226 (414) 771-3040.

Scoops and Scuttlebutt. *Continued*

New Project Coordinator Named for KTMP

Laura Treschel, Minnesota Zoological Gardens, has been named Coordinator of the Keeper Training Materials Project for the Association. Laura had previously been the Manual Coordinator for the project. The purpose of the KTMP is to gather and make available information on zoo keeper training and continuing education. Currently available are a number of training manuals and other materials from various zoological facilities for use in setting up or enhancing training programs. For further information you may contact Laura at Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124.

Bids for the 1994 AAZK National Conference Now Being Accepted

To All AAZK Chapters:

Bids for the 1994 National AAZK Conference may be submitted any time prior to the 1991 National Conference in Toledo. Any AAZK Chapter in good standing may submit a bid to host the 1994 National Conference. As stated in the AAZK By-laws Article IV Section 2, all bids must be approved by the AAZK Board of Directors before the Chapter may begin advertising to host the conference.

Bids should include a letter of intent to host the 1994 AAZK Conference from the Chapter's President. Support letters of approval from the Zoo's Director as well as from the Mayor or other relevant persons or agencies (i.e. zoological society, city council, convention bureau, etc.) should also be included. The original letters should be sent to the AAZK Vice President, Bob Debets.

Accepted bids for the 1994 AAZK National Conference will be expected to make a formal presentation to the delegates attending the 1991 AAZK (Toledo) Conference, at which time the AAZK delegates will vote on the submitted bids for the site of the 1994 conference.

If you have any questions or concerns about hosting a Regional or National AAZK Conference, please contact: Bob Debets, Vice President AAZK, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. Phone: (204) 986-4040 FAX (204) 896-3927.

World Wildlife Fund Conservation Award



World Wildlife Fund is requesting nominations for the 1991 Conservation Recognition Award to be presented to an AAZK Chapter for its contributions to conservation. The selection will be based on the significance and impact of the Chapter's conservation project(s). Nominations should include a description of the project(s) along with reports, articles, press clippings, etc., that the project(s) produced. These projects can encompass education, research, or fund-raising for conservation activities. The nominated project(s) should be AAZK Chapter initiated and supported.

Please submit nominations to: *Rich Block, Director of Public Programs*
World Wildlife Fund
1250 24th Street, N.W.
Washington, DC 20037

The deadline for submitting nominations is 30 August 1991



Coming Events

1991 AAZPA Annual Conference

September 15-19, 1991

San Diego, CA

1991 American Association of Zoo Veteranians Annual Conference

September 28-October 3, 1991

Calgary, Canada

For general conference or association information contact: Wilbur Amand, VMD, Executive Director, AAZV, Philadelphia Zoo, 34th St. & Girard Ave., Philadelphia, PA 19104, (215) 387-9094; FAX (215) 38708733. Individuals interested in participating in the program should contact William Foster, DVM, Louisville Zoo, P.O. Box 37250, Louisville, KY 40213; (502) 459-2181.

Association of Zoological Horticulture Conference

September 30-October 3, 1991

Cincinnati, OH

To be held at the Cincinnati Zoo & Botanical Garden. For further information contact: Rob Halpern, Horticulturist, Cincinnati Zoo & Botanical Garden, 3400 Vine St., Cincinnati, OH 45220 USA, (513) 281-4701 Ext. 8307.

1991 AAZK National Conference

October 6-11, 1991

Toledo, OH

For further information write: Toledo Zoo AAZK Chapter, Conference '91, Toledo Zoo, 2700 Broadway, Toledo, OH 43609.

12th International Elephant Workshop

October 16-19, 1991

Syracuse, NY

For further information, please contact the Elephant Workshop Steering Committee, Burnet Park Zoo, 500 Burnet Park Drive, Syracuse, NY 13204. Phone (315) 435-8511; FAX (315) 422-1224.

11th Annual Conference of the American Association of Zoo Veterinary Technicians

October 23-27, 1991

Dallas, TX

For further information contact: Rita Buice, Dallas Zoo, 621 E. Clarendon Drive, Dallas, TX 75203.

19th Annual Conference of the International Marine Animal Trainers Association

November 3-8, 1991

Vallejo, CA

Conference will be held at the Sheraton Hotel in Concord and will include paper sessions, poster presentations, discussion groups, SAIC/SEACO art contest, informal film and video presentations and tours at Marine World Africa USA. For further information contact: Sonny Allen, Vice President/IMATA, c/o Marine World Africa USA, Marine World Parkway, Vallejo, CA 94589.

Coming Events. *Continued*

Understanding Chimpanzees: Diversity and Survival

December 11-15, 1991

Chicago, IL

Organized by Jane Goodall, the conference will take a comparative approach to understanding the behavior of chimpanzees and bonobos; documenting behaviors and behavioral variability, investigating hypothesis that explain variations, and exploring comparative methodology. Held at the Chicago Academy of Sciences, the symposium will explore the use of video for documentation and comparison. The conference will survey the population status of Chimps and Bonobos, the threats to their habitat, and the development of sanctuaries. It will pursue an agenda for conservation in the wild and in captivity. To receive a preliminary program and registration information, contact: Linda Marquardt, The Chicago Academy of Sciences, 2001 N. Clark St., Chicago, IL 60614 (312) 943-6969.

The Ninth Dr. Scholl Conference on the Nutrition of Captive Animals

December 13-14, 1991

Chicago, IL

Co-sponsored by the Lincoln Park Zoological Society and the Chicago Park District, the conference will be held at the Lincoln Park Zoological Gardens. There will be general sessions on **Captive Animal Nutrition** and a special session on **Avian Nutrition**. For registration information, contact: Lois Stanley, Lincoln Park Zoo, 2200 N. Cannon Dr., Chicago, IL 60614, (312) 294-4666.

International Conference on Molluscan Conservation

September 10-12, 1992

Glasgow, Scotland

The University of Glasgow will be the venue for the conference. Sessions will include Taxonomy, Distribution, Legislation, and Conservation. For further information contact: Fred Woodward, International Conference on Molluscan Conservation, Kelvingrove Museum & Art Gallery, Kelvingrove, Glasgow G3 8AG, Great Britain. Fax: (041) 357-4537 Telephone: (041) 357-3929.

AAZK Announces New Professional/Contributing Members

Kathleen St. Clair, Santa Fe Teaching Zoo (FL)

Marc McCarthy, Lion Country Safari (FL)

Steve Holt, Birmingham Zoo (AL)

Mark J. Bowen, Birmingham Zoo (AL)

Kevin Grizzle, Louisville Zool. Gdns. (KY)

Laura Holly, The Texas Zoo (TX)

Catherine Burch, San Diego Wild Animal Park (CA)

Michelle-Leigh Suenishi, Hilton Hawaiian Village (HI)

Valerie Bowler, Metro Toronto Zoo (Ontario)

Leslie Braun, Discovery Island (FL)

Holly Morrell, Lion Country Safari (FL)

Donna A. Bowen, Birmingham Zoo (AL)

Tina Ann Judd, Knoxville Zoo (TN)

Lola Curtis, Audubon Zool. Prk. (LA)

Martin Ramirez, Jr., San Diego Zoo (CA)

Kim Kingston, Vancouver Aquarium (B.C.)

New Contributing Members

John Mellyn, Wauconda, IL

Renewing Contributing Members

Central Park Zoo, New York, NY

Doug Porter, Executive Director, Great Plains Zoo, Sioux Falls, SD

Kathy DeFalco, San Diego Zoo Volunteer, Escondido, CA



Births & Hatchings



Beardsley Zoological Gardens...reports its first North American river otter (*Lutra canadensis*) birth on 1 April 1991. Two pups were born, a male weighing 140 grams and a female weighing 145 grams. The parents, a seven-year-old male and eight-year-old female, have been together for five years and began exhibiting breeding behavior for the first time last year. The mother kept the pups in their off-exhibit den area for nine weeks. The family group is now together, utilizing the full exhibit space. *submitted by L. Tryon, Beardsley Zoological Gardens, Bridgeport, CT.*

Omaha's Henry Doorly Zoo...twenty-eight Black-footed ferret (*Mustela nigripes*) kits (17.11) were born to six females during our second successful breeding season. Three females were first-time mothers and the other three were second-time mothers. Litter sizes ranged from two to seven kits. The staff is closely monitoring the kits during weaning; and conditioning has begun for reintroduction into the wild. Kits from four litters will be part of the reintroduction efforts this Fall into the Shirley Basin Medicine Bow area of Wyoming. The Zoo currently had 31.23 ferrets. *submitted by Carla Wieser, Keeper, Henry Doorly Zoo, Omaha, NE.*

San Antonio Zoo...two Pygmy marmosets (*Callithrix pygmaea*) were born on 13 June. A Golden-bellied mangabey (*Cercocebus galerritus chrysosaster*) were born 17 June. These were the first births for these species in our collection. Other mammals recently born include: 0.01 Goeldi's monkey (*Callimico goeldi*), 0.1 Common squirrel monkey (*Saimiri sciureus*), 0.01 Three-banded armadillo (*Tolypeutes matacus*), 1.0 Reticulated giraffe (*Giraffa camelopardalis*), 1.0 Slender-horn gazelle (*Gazella leptoceros*), and 1.0 Topi (*Damaliscus lunatus jimela*).

0.02 Scarlet macaws (*Ara macao*) were hatched for the first time in our collection on 24 and 26 June. Other avian hatchings include: 0.01 Small-billed tinamou (*Crypturellus parvirostris*), 0.01 Bahama pintail (*Anas b. bahamensis*), 0.07 Ringed teal (*Callonetta leucophrys*), Eyton's tree duck (*Dendrocyona eytoni*), 0.05 N. American ruddy duck (*Oxyura jamaicensis*), 0.08 Sacred ibis (*Threskiornis aethiopicus*), 2 Scarlet ibis (*Eudocimus ruber*), 0.01 Demoiselle crane (*Anthropoides virgo*), 0.01 Malayan peacock pheasant (*Polyplectron m. melacense*), 0.05 Kenya crested guineafowl (*Guttera pucheri*), 0.02 Roadrunner (*Geococcyx californiana*), 0.02 Palawan peacock pheasant (*Polyplectron emphanum*), 0.07 Bulwer's wattled pheasant (*Lophura bulweri*), 0.03 Roul roul (*Rollulus rouloul*), 0.02 Great crowned pigeon (*Goura cristata*), 0.03 Sun conure (*Aratinga solstitialis*), 0.06 Painted conure (*Pyrrhura p. picta*), and 0.04 Green junglefowl (*Gallus varius*).

Reptile births and hatchings include: 0.05 Pueblan milksnake (*Lampropeltis triangulum campbelli*), 0.02 Prehensile-tailed skink (*Corucia zebrata*), 0.23 African fat-tailed gecko (*Hemithconyx caudicinctus*), 1.1.2 Namib sand gecko (*Chondrodactylus angulifer*), 0.02 Standing's day gecko (*Phelsuma standingi*). We experienced a first hatching of 0.01 Rough scaled gecko (*Pachydactylus rugosa*) for our collection. Unfortunately, it did not survive. *submitted by Terrence L. Fisher, Registrar, San Antonio Zoo, San Antonio, TX.*

Brookfield Zoo...reports the following B&H for January-July 1991 -

Mammal Dept. - in the Fragile Kingdom (renovated Lion House reopened May '90) the following births have occurred: 1.0 Binturong (*Arctictis binturong*) born to a 17-year-old female from Honolulu Zoo (maximum breeding age); 1.0 Prevost's squirrel (*Callosciurus prevosti*) - the sire is wild-caught and the dam captive-born; 0.2 Caracal (*Felis carcal*) born late June to a pair acquired from South Africa; and 0.010 Naked mole rat (*Heterocephalus glaber*) were born late June of which 0.07 are surviving. This is the

Births & Hatchings, Continued

6th litter born on exhibit since its opening. Most of the 4 litters have survived. The group has been divided with 5.3 mole rats located in a separate area of the building in an attempt to establish another breeding colony. All of the above animals are being mother-raised. The binturong and caracals are being weighed on a regular basis (with no ill effects to either mother or young) and will provide infant development information.

Elsewhere in the Mammal and Primate Dept. the following significant births have occurred: 0.01 Western lowland gorilla (*Gorilla g. gorilla*), on loan from Cincinnati Zoo; 0.03 Rodriguez fruit bat (one of which only survived one month) bringing our colony to 10.10.1; 0.1 Springhaas (*Pedetes capensis*) - was given supplemental feedings; 0.01 Pallas cat (*Felis manul*) born to dam and sire from Moscow Zoo - unfortunately they DNS.

Acquisitions include: 0.2 Southern hairy nosed wombat (*Lasiorhinus latifrons*) on loan from Rotterdam Zoo; 1.1 Bat-eared fox (*Otocyon megalotis*) on loan from Los Angeles Zoo and 1.1 Pacific walrus (*Odobenus rosmarus*) on loan from the Moscow Zoo.

Bird Dept. - the following have hatched: 0.02 Humboldt penguins (*Spheniscus humboldti*) and 0.01 Micronesian kingfisher (*Halycon cinnamomina*). Unfortunately the kingfisher only survived 3 days. submitted by Karen L. Anderson, Chapter Liaison, Brookfield Zoo, Brookfield, IL.

Bronx Zoo...spring and the early part of summer '91 saw numerous significant B&H at our zoo.

Mammal Dept. - in the Monkey House, 0.01 Douroucoulis (*Aotes trivirgatus*) was born, the first birth from one of our two newly acquired females. 0.02 Silvery marmosets (*Callithrix argentata*) were also born here. This was the second set of twins for this pair, one of two on display. The older juveniles are already helping out by taking turns carrying the newborns. The Douroucoulis, Silvery marmosets and other South American primates are all seriously threatened due to the destruction of their rainforest habitats. Our breeding pair of Lesser mouse lemurs (*Microcebus murinus*) finally got their act together and produced 0.02 young in June. The Mouse lemurs share their exhibit with a pair of Tenrecs or Pygmy hedgehogs (*Echinops telfari*). The female of that pair is now off-exhibit having just given birth to 0.06 young. Fortunately for her, the young are born over a period of a few days, not all at once. Another Slender-tailed cloud rat (*Phloeomys pallidus*) was born at the Mouse House. This has been the third successful birth in the park for these unusual and extremely rare rodents. 1.1 Snow leopards (*Uncia uncia*) were born in the maternity area at the Himalayan Highlands. The SSP breeding program for these rare cats has been very successful. Concluding the report from the Mammal Dept. was 1.0 Pere David's deer (*Elaphurus davidianus*) born at the Rare Animal range. These deer owe their existence to the captive breeding at zoos.

Bird Dept. - 0.02 Javan whistling ducks (*Dendrocygna javanica*) were hatched at Jungle World. These Asian ducks are rare in collections. 0.04 Waldrapp or Bald ibis (*Geronticus eremata*) were hatched. The colony has done very well and recently 4 birds were shipped out. These birds are practically extinct in the two areas of the world where they are native, one being a region of Turkey. Captive breeding and subsequent release programs will be needed. At the Propagation Building 0.04 Guam rails (*Rallus owstoni*) hatched and are being parent-reared for use in the reintroduction program. Out of the 0.03 White-naped cranes (*Grus vipio*), two have survived, one of these was artificially incubated, the other two were incubated by foster parents. From the World of Birds 0.01 Micronesian kingfisher (*Halycon cinnamomina*) was hatched, this hatching the first for this newly formed pair. 0.03 Blyth's tragopan (*Tragopan blythi*) hatched at the Pheasant Aviary. Two have survived and are doing well. This is a first for the Bird Dept. Also hatched at the aviary: 0.02 Blood pheasants (*Ithaginis cruentus*), one had survived and is doing well, and 0.01 Malayan argus (*Argusianus argus*). From our South American section 0.01 Greater rhea (*Rhea americana albescentis*) was hatched. Great news from the Aquatic Bird House! The only group of captive Hoatzins (*Opisthacomus hoazin*) have bred and laid eggs. The first clutch was fertile, but regrettably the eggs fell from the nest. The female has laid again, this time in a nest that was keeper-strengthened. The eggs, if

Births & Hatchings, Continued

fertile, are due to hatch shortly. Some significant acquisitions of note: 2.2 Bali mynah (*Leucopsar rothschildi*) to be used in the breeding program; 0.1 Manchurian crane (*Grus japonensis*) paired with our lone male; and 0.0.6 Emu (*Dromiceius n. novaebollandiae*).

Reptile Dept. - 0.0.11 Bornean pond turtles (*Orlitia borneoensis*) were a significant hatching. This is another first hatching in a U.S. zoo for this little known species. The adults, on exhibit in Jungle World, are on loan from the Columbus Zoo.

--submitted by Peter Psillas, Vice Pres., Bronx Zoo AAZK Chapter. Bird Section submitted by Doug Piekarz, Chapter President, Bronx Zoo, New York.

Detroit Zoo/Belle Isle Zoo...the following is a compilation of B&H from these two facilities from Sept. 1990-June 1991.

Mammal Dept. - on 2 December 1990, our nine-year-old female Polar bear (*Ursus maritimus*) gave birth to twin cubs. One of these two cubs survived through denning and is doing well. The cub was sired by our eight-year-old male. On 8 April 1991, a female Chimpanzee (*Pan troglodytes*) estimated born in 1970, gave birth to 0.2 fraternal twins. This was her sixth birthing event. One was pulled a few hours after birth to be hand-raised, and the other was kept with her mother to be raised. Both are doing well. Our 0.1 Tree kangaroo (*Dendrolagus matschiei*) gave birth to 1.0 joey. It was first noticed in the pouch on 15 September 1990. The mother was born in September of 1983. There were 11 Western grey kangaroo (*Macropus fuliginosus melanops*) born between 12 December 1990 and 14 March 1991 at the Belle Isle Zoo. 1.0 Scimitar-horned oryx (*Oryx dammah*) was born on 28 June 1991.

Bird Dept. - 0.0.2 Egyptian geese (*Alopochen aegyptiacus*) were hatched on our Swamp Exhibit on 26 April. On 19 April, in our free-flight aviary, 0.0.2 Spur-winged plovers (*Vanellus spinosus*) hatched. Of the three two survived and are doing well. 0.0.2 Cattle egrets (*Ardeola ibis*) hatched in early March. The parents were captive-raised and were wintering in our free-flight aviary. 0.0.6 Trumpeter swans (*Cygnus cygnus buccinator*) were hatched during the second week of June 1991. Four hatched at the Detroit Zoo and two at the Belle Isle Zoo. On 16 June, a 0.0.1 Lesser white-fronted goose (*Anser erythropus*) hatched, the first hatching of this species at the Detroit Zoo. On 31 May, 0.0.2 Lesser snow geese (*Anser caerulescens caerulescens*) hatched.

--submitted by Elizabeth E. Johnson and Maya Perry of the Detroit Zoo AAZK Chapter, Detroit, MI. Elizabeth is the Chapter Secretary.

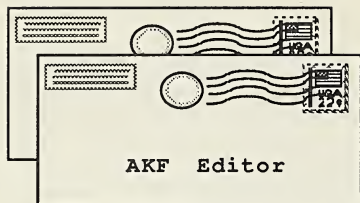


AAZK Administrative Offices

1-800-242-4519 (U.S. Only)

1-800-468-1966 (Canada)

FAX 913-272-2539



Letters to the Editor

Dear Editor,

I came across an article in the *New York Times* dated 26 May 1991 entitled "Resist the Anti-Zoo Zealots" by Michael Robinson, Director National Zoo, and Ross B. Simons, Deputy Assistant/Research Smithsonian Institution. After reading this article I was moved to write this letter. I feel these two men were brave and admirable to speak up about such an issue in these troubled times.

They speak of an issue that is close to home for most zoo keepers....what would happen if my zoo was closed? Who would care for the animals? Where would they be housed? How could "Susie", the baboon, be released in in the wild and receive her medication so she won't die?

As you can see, in a few words, we have a very complicated issue with many differing views on what the right thing to do would be. I can't think of a time I've been more proud of the accomplishments of the zoo community than I am today. We Keepers and zoo Administrators are working side-by-side with the less privileged Third World zoos by participation in the Zoo Outreach Group. We Keepers and zoo Administrators are purchasing land through conservation programs such as the Conservation Parking Meter and the Adopt-an-Acre Project.

How can we throw away the culmination of so many peoples' work for the good of the animals by allowing a few vocal people to sway those who will listen. Zoos today can proudly say they actively contribute to the conservation of species rather than taking from the wild. Are zoos to become extinct and allow the accelerated extinction of many species to occur?

It is man, as a species, that has caused so many problems for our environment and its wildlife. Let us not point an accusing finger at the zoo's existence as a reason for the endangerment of animals. This would be an example of the true definition of "speciesism"..... to deny that we as people are the causative factor of our conservation problems.

We can also make the difference and zoos can teach us that! As Zoo Keepers, the public looks to us to answer their questions. Some inquiring minds want to know...where is the exit? But every once and awhile you may be asked: How many rhinos are left in the world? Why do poachers kill elephants? Why do Florida panthers get hit by cars? You've just been given an invitation to practice one-on-one conservation awareness. You can make someone's day at the zoo into a thought-provoking experience.

Rachel Watkins Rogers
Zoo Keeper

(Editor's note: if you would like a copy of Michael Robinson's article from the New York Times, send a self-addressed, stamped legal -sized envelope to AKF Editor, 635 Gage Blvd., Topeka, KS 66606: In part, Dr. Robinson's article dealt with the pressure by anti-zoo groups to close the London Zoo--AAZK has also been contacted by keepers at that facility asking our help in applying pressure on the British government to fund this venerable and scientifically important institution. Packets were sent out to all AAZK Chapters with information on how they could provide support for their fellow keepers in England. If you would like information on how you can help, contact AAZK Administrative Offices at 1-800-242-4519. Letters to the Editor are always welcome.)





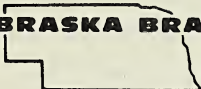
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AKF Survey Results Part I

The following are the statistical results of the survey conducted on *Animal Keepers' Forum* in the March 1991 issue. We received 144 total responses from the 2650 copies mailed that month. This equates to a .05% return on the survey. We received 118 responses from keepers and 26 responses from individuals in positions other than that of full-time zoo keepers. Those questions from the survey which could be statistically tabulated are presented here without comment from the editorial staff. Those reading these results may draw their own analysis and/or conclusions from the statistics presented. Please be aware that not all respondents answered all questions, so that the total of responses in any category may not necessarily total 144. A presentation of and response to the comments, suggestions and criticisms received in the survey will be published in the September issue of *AKF*.

In responses showing two numbers (example 36/4), the first number is a response from a keeper, the second number denotes a response from a non-keeper.

1. How long have you been a keeper? a. 1-5 yrs 45/1 b. 6-10 yrs 42/6
c. 11-15 yrs 19/1 d. 16-20 yrs 4/11
e. over 20 yrs 3/2 f. no response 10

If you are not a keeper, what is your position? Listed were: behavior researcher, naturalist, curator, veterinary assistant, education director, consultant, volunteer, zoo director, docent, park superintendent, rehab volunteer, aviculturist and technician.

2. How long have you been reading AKF?

- | a. less than 1 year | b. 1-5 yrs | c. 6-10 yrs | d. 11-15 yrs | e. over 15 yrs | f. no response |
|---------------------|------------|-------------|--------------|----------------|----------------|
| 8/0 | 54/10 | 33/6 | 14/5 | 4/1 | 10 |

- 3. In what state/province/country is your facility located? The following are the states/provinces/countries from which we received survey responses and how many we received from each location.**

AL (1), Alberta (6), AR (1), AZ (3), CA (17), CO (2), CT (3), FL (5), GA (4), IL (6), IN (6), IA (1), KS (8), LA (4), ME (1), Manitoba (1), MD (2), MA (1), MI (3), MN (2), MT (1), NE (6), NV (1), NJ (2), NY (10), NC (1), OH (4), Ontario (7), OR (3), PA (2), TN (1), TX (5), UT (1), VA (2), WA (12), WI (4), District of Columbia (3) and 2 from Australia.

- | | | | |
|--|-----------|--------------|----------|
| 4. Do you read your monthly <u>AKF</u> ? | a. Always | b. Sometimes | c. Never |
| | 132 | 12 | 0 |

5. Of the numerous regular and semi-regular sections of AKF, how do you rate the frequency with which you read the following:

	Always	Sometimes	Never
Scoops and Scuttlebutt	122	21	1
Births & Hatchings	81	55	8
Coming Events	108	36	0
Chapter News	61	74	9
Book Reviews	38	93	13

AKF Survey - Part I, Continued

	Always	Sometimes	Never
Legislative News	59	71	14
Information Requests	124	20	0
Keeper's Alert	118	18	8
Opportunity Knocks	116	25	3
Viewpoint	73	65	6
From the President	71	66	7
LINK System Memos	42	75	27

6. Information on upcoming AAZK Conferences is published in pull-out inserts in AKF.

Do you find this format convenient and useful to you?	YES 135	NO 6	No Opinion 3
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Do you think enough information is provided on conferences?	YES 134	NO 10
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7. Do you feel there is enough information in AKF about what is happening in AAZK to keep you informed about your association?

YES 124	NO 16	No Opinion 4
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8. Because we are an open forum for all keepers, there is always some variation in the professional levels and style of information provided in articles in AKF. Some articles tend to be more research-oriented while others are on more general husbandry topics. Which type of article would you prefer to read more often in your AKF?

Research - 4	Husbandry - 79	A Mix of Both - 58	No Opinion - 3
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9. It has been proposed that AKF print General Husbandry articles and publish detailed Research Papers in a separate publication, for example the yearly Conference Proceedings. Would you be in favor of this?

YES - 59	NO - 68	No Opinion - 17
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10. Would you favor the establishment of a Review Committee to help in the review process of technical articles?

YES - 91	NO - 24	No Opinion - 15	No response - 14
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12. Are you satisfied with the present front cover drawings on AKF?

YES - 121	NO - 20	No opinion - 3
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13. How would you rate the job being done by the editors in putting together the AKF and in covering topics of interest to the membership?

Formatting of <u>AKF</u>	Excellent - 71	Good - 57	Fair - 13	Poor - 3
Contents of <u>AKF</u>	Excellent - 54	Good - 79	Fair - 10	Poor - 1





International



News

An ivory substitute made from milk, eggshells and titanium dioxide may save the lives of African elephants. We can only hope that it will also help the walruses which are facing increased pressure since the ban on elephant ivory.

Nature News Vol. 1, No. 7, 1991
Oryx Vol. 25, Jan. 1991

1990 saw the birth of the 40th Howletts-born gorilla "Jubi". Her mother was also the mother of Howletts first-ever baby "Kyo".

Ratel, April 1991

The first successful hand-raising of a Milky Stork (*Ibis cinereus*) hatched in captivity occurred at the Negara Zoo, near Kuala Lumpur in Malaysia.

Zoorama, Malaysia Issue No. 4/89

Poachers in Assam, northeast India, which is home to nearly 80% of the world's Indian rhino (*Rhinoceros unicornis*), have developed a new and terrible way of trapping the animals. They are being electrocuted by high voltage wires! (11,000 volts). At least seven are known to have died this way since the end of 1989.

Ratel, April 1989

An Indian Subcontinent Reptile and Amphibian Specialist Group of IUCN/SSC was recently formed. This group will work on identifying taxa in need of conservation and regions of high herpetological diversity and/or endemism. They will then prepare suitable action and conservation plans.

Zoo's Print, July 1990

The subspecies of Bald ibis found in Turkey (*Geronticus calvus*) has lost its struggle to survive in the wild. Only 3 birds returned to Birecik in southeast Turkey after their Red Sea winter and all died before they could reproduce. The Bald ibis was one of the world's first officially protected species under a decree by Archbishop Lionhard of Salzburg in 1504.

Thylacinus, Winter 1990

The Royal Zoological Society of South Australia's ZOOWATCH program was officially launched in Feb. 1990. ZOOWATCH involves volunteers who can assist in information and data collection as part of zoological research projects.

Thylacinus, Winter 1990

"Today the (African) wild dog (*Lycaon pictus*) is the most endangered large carnivore in Africa." Only 3,000 to 5,000 still remain due to habitat encroachment and indiscriminate killing due to their "vicious killer" reputation. Some packs on the Serengeti are being inoculated against diseases such as rabies, which can quickly spread, in an effort to curb the dying.

Swara, Jan/Feb 1991

Thanks again to the 19 individuals and Chapters who are sponsoring a Foreign Keeper. A reminder to those who are sponsoring Indian keepers and receiving Zoo's Print to consider

International News *Continued*

taking out an International Membership (\$50.00 U.S.) in Z.O.O. (Zoo Outreach Organization) to help offset the cost of receiving this publication.

Welcome to three new sponsees and thanks to their new sponsors:

Ivo Jaik - Tallinn Zoo, Russia
Tiit Maran - Tallinn Zoo, Russia
Xve Chongde - Shanghai Zoo

San Diego Chapter AAZK
San Diego Chapter AAZK
Lincoln Park Zoo AAZK Chapter

We need more sponsors as we still have a lot of people awaiting sponsorship. We also have two people who were previously sponsored who need new sponsors: Nazker Devi, India, was sponsored by Judie Steenberg - Nazker cannot write English but we have received letters from her new boss who is very encouraging; Doreen Khoo Say Kin, Malaysia, was sponsored by Nancy Hanson - Nancy sponsored Doreen for the Animal Management Course! Thanks to both Judie and Nancy for their support. Neither sponsee was dropped due to problems and would certainly appreciate continued support.

If anyone wants information on the sponsorship program or has any noteworthy piece of world zoo/animal/conservation news that you feel would be of interest to AKF's readers, please contact Mona Keith or Pam McDougall, IAC's c/o Calgary Zoo, Box 3036, Station B, Calgary, Alberta, Canada T2M 4R8.

Thanks,

Mona Keith and Pam McDougall
International Affairs Coordinators

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Name _____

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California Condor - Coming Back from the Brink

By
Susie Kasielke, Curatorial Assistant
Los Angeles Zoo, Los Angeles, CA

The California condor (*Gymnogyps californianus*) is a member of the family Cathartidae whose other North American members are the Turkey vulture (*Cathartes aura*) and Black vulture (*Coragyps atratus*), both found widely in Central and South America. The Yellow-headed vulture (*Cathartes burrovianus*) and Greater yellow-headed vulture (*Cathartes melambrotus*), are found in Central America. Colorful King vultures (*Sarcorhamphus papa*) are found in tropical Central and South America, while the Andean condor (*Vultur gryphus*) ranges the length of the Andes mountains. Only the male Andean condor is larger than the California condor, weighing up to 33 pounds and having a wingspan of up to 10 feet.

Originally classified in the order Falconiformes along with hawks, eagles, falcons and Old World vultures, condors and other New World vultures in the family Cathartidae have recently been shown by scientific evidence to belong in the order Ciconiiformes, as they are more closely related to storks than to any other group.

Adults weigh 17-24 pounds and have a wingspan of up to 9.5 feet. In the adult, plumage is blackish with a long triangular white patch under the wing. The head and neck are bare except for a 'mask' of sparse, short black feathers extending across the face between the eyes and down to the jawline. The skin of the head and neck is colored in shades of pink, red, orange, yellow and light blue, and becomes more intensely pink during times of excitement and in breeding season. Although males weigh slightly more on average, there is nothing to visually distinguish the sexes. The beak is long, sharp and powerful. The feet lack the ability to grasp. Juveniles are entirely dark, gradually showing lighter underwing feathers with the head developing a freckled appearance as color emerges near maturity. The iris of the eyes also then gradually changes from tan to red.

At hatch chicks have light pink and orange skin and are covered in off-white down which is quickly replaced by a gray second down.

At this writing, the entire population of 40 California condors is housed in captivity, half at the Los Angeles Zoo and half at the San Diego Wild Animal Park. Their immediate former range was limited to the coastal ranges of Southern California, with nesting occurring primarily in the chaparral-covered mountains of the Los Padres National Forest and foraging in the grasslands of the San Joaquin Valley. Prior to the arrival of the pioneers, the condor's range extended from British Columbia south through Baja California. During the Pleistocene Era, ending 11,000 years ago, the condor's range extended across the southern half of North America and along both the Atlantic and Pacific coasts, feeding on now-extinct animals such as giant sloths, primitive horses and camels.

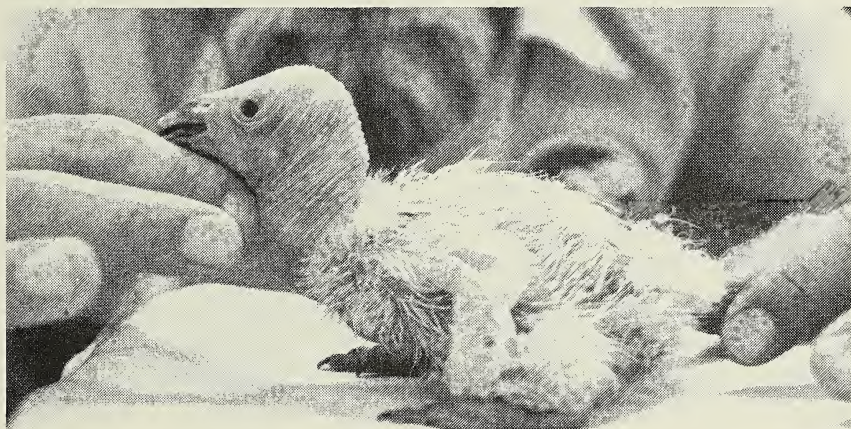
The condor does not kill prey and feeds on animals that are already dead which it finds by sight and by following other scavengers. From the Pleistocene to the mid-nineteenth century, bison, deer, pronghorn, as well as beached dead marine animals comprised most of the diet. Most recently its diet consisted largely of cattle and native deer, along with available smaller animals. A condor may eat up to 3-4 pounds at a time, holding the food in its distensible crop and will not need to eat again for 3-4 days. In captivity condors are fed a varied diet including whole animals (primarily rodents), fish and a ground meat product supplemented with vitamins and minerals. Each consumes about a pound of food daily. Parent birds regurgitate partially digested food for their young, while artificially-reared chicks are given finely chopped mice well moistened with water.

Sexual maturity is reached at 5-7 years of age. Condor pairs stay together over successive seasons, but if one partner is lost the other will pair with a new mate. Nesting takes place in

California Condor - Back from the Brink, *Continued*

caves, knotholes and sheltered outcrops in the faces of steep cliffs. One nest was found to be in a huge knothole 80 up in a giant sequoia tree. No nesting material is added and the female lays a single pale aqua-colored egg directly on the accumulated sand and other debris in the nest. Parents alternate incubating the egg, which initially weighs approximately 280 grams (10 oz.) and on averages measures 110 x 67 millimeters (4.4 x 2.7 inch).

When the chick hatches after 54-58 days of incubation, the parents continue to share duties of feeding and brooding the chick. Flight feathers are fully developed at about six months, but the chick is still dependent on the adults who may continue to feed it for more than a year as it learns foraging skills. If an egg is lost to breakage or predators, the pair will often produce a replacement egg in 4-5 weeks (double-clutching). Some pairs have laid three eggs in a single season (triple-clutching), and this phenomenon of recycling is used to increase the number of offspring produced from the normal single young to as many as six in a two-year period in captivity by removing eggs for artificial incubation as soon as they are laid.



Molloko, the first captive-bred and hatched California condor, was born on 29 April 1988 at the San Diego Wild Animal Park. The chick was named by the Northern Maidu Indian tribe -- the name means condor. Photo by Ron Garrison © Zoological Society of San Diego

The California condor is the largest flying bird in North America and relies on soaring, rather than flapping, flight. Taking care to roost where it can launch easily or land where a few wingbeats will bring it airborne, the condor uses uplifting winds along mountain ridges to stay aloft. The bird seeks out warm thermal updrafts, spiraling in them to gain altitude, then glides for long distances before seeking another thermal for lift. As highly intelligent, social birds, non-nesting condors often roost in large groups on rocky ledges and in trees. Dominance hierarchy is strictly maintained yet constantly challenged within a given group and is most apparent in feeding situations. They are intensely inquisitive by nature and playful with each other in relaxed circumstances even as adults. Individual condors in captivity often entertain themselves at length with objects such as sticks and long grass roots by chasing and tossing them, and will even retrieve them from underwater in the pool.

The condor has no syrinx, but communicate with a remarkable combination of hisses, growls and grunts in addition to a well-developed system of body language.

Condors are highly revered by California's Native Americans. The bird as a symbol features prominently in ritual and legend, and many believe that their spirits are carried into the next world on the wings of the condor. Humans, however, have been the biggest enemy of the condor in modern times, often unintentionally. Condors, like predatory birds, have been shot indiscriminately from pioneer times up to the present. Pesticide

California Condor - Back from the Brink, Continued

residues in the environment have led to eggshell thinning so severe that parents crushed their eggs while incubating. Poisoning by lead bullets eaten while feeding on the remains of hunters' unrecovered and field-dressed deer, as well as collisions with power lines and poison intended for ground squirrels and coyotes, have pushed the condor to the very brink of extinction in recent years.

When the last condor was brought in from the wild in 1987, there were only 27 left. Captive breeding has increased the population to 40 in 1990 and with continued success releases to the wild may take place as early as 1991. It will take decades of careful management to bring the condor out of its endangered status. Traditional nesting and roosting areas are already well protected. Clean food will be provided until safe, natural food sources are redeveloped by repopulating foraging areas with native hoofed animal species. The use of non-toxic bullets by hunters and the conversion to underground electrical lines by power companies in key areas are examples of ways condors could be protected in the future. The long-term, goal of the California Condor Recovery Program is to establish three separate, self-sustaining populations of 100 or more birds each - one in captivity, divided among three institutions, and two populations in the wild. The California condor can then be downlisted from Endangered to Threatened status.

1991 CALIFORNIA CONDOR EGGS

<u>laid</u>	<u>location</u>	<u>sire</u>	<u>dam</u>	<u>status</u>	<u>name</u>
January 19	Los Angeles	Kaweah	Anyapa	h. March 17	Moko
January 19	San Diego	AC5	AC8	inviabile	
February 1	Los Angeles	Cuyama	Cachuma	h. March 30	Pawoco
February 1	San Diego	Paxa	Almiyi	h. April 1	Otum
February 6	Los Angeles	Sequoia	Sespe	inviabile	
February 6	Los Angeles	Topa	Malibu	infertile	
February 7	San Diego	AC4	UN1	h. April 6	Tsuts
February 10	Los Angeles	AC9	Squapuni	h. April 8	Xewe
February 24	San Diego	Sisquoc	Tecuya	broken	
February 26	Los Angeles	Kaweah	Anyapa	h. April 24	Rotciwi
February 28	San Diego	Paxa	Almiyi	infertile	
February 28	Los Angeles	Cuyama	Cachuma	h. April 26	Preghawish
March 1	San Diego	AC5	AC8	inviabile	
March 2	Los Angeles	AC6	Pismo	h. April 28	Kitsuk
March 4	Los Angeles	Topa	Malibu	infertile	
March 11	Los Angeles	AC9	Squapuni	h. May 8	Hoinewut
March 12	San Diego	Xolxol	Ojai	infertile	
March 27	San Diego	Sisquoc	Tecuya	infertile	
March 29	Los Angeles	AC6	Pismo	due May 25	Teneiya
April 3	San Diego	AC5	AC8	due May 30	
April 5	San Diego	AC4	UN1	due June 1	
April 7	Los Angeles	AC9	Squapuni	due June 3	Naca

S. Kasielke 05-14-91

California Condor - Back from the Brink, *Continued*

CALIFORNIA CONDOR POPULATION APRIL 10, 1991

<u>name/ID</u>	<u>sex</u>	<u>hatched</u>	<u>captured/status</u>	<u>age</u>	<u>location</u>	<u>captive breeding</u>
AC4	m	unknown	06-25-85/juvenile	unknown	SDWAP	0.1'88; 2.0'89;
UN1	f	unknown	08-07-85/adult	unknown	SDWAP	1 egg inviable '90; 0.0.1 & 1 egg '91
Cuyama	m	05-05-83	08-01-83/chick	8 years	LAZ	1 inf egg & 1.0
Cachuma	f	07-02-83	83/chick	8years	LAZ	'89;1.1 '90; 0.0.2 '91
AC5	m	unknown	02-27-87/adult	unknown	SDWAP	0.1'89; 1.2 '90;
AC8	f	unknown	06-01-86/adult	unknown	SDWAP	3 eggs '91 (2 inviable)
Kaweah	m	04-09-85	85/egg	6 years	LAZ	1 inf egg '89;
Anyapa	f	05-01-84	84/egg	7years	LAZ	1.1 '90;0.0.2 '91
Paxa	m	05-01-81	12-05-82/juvenile	10 years	SDWAP	1 inf egg '89; 0.1
Almiyi	f	05-27-83	83/egg	8 years	SDWAP	+2 inf eggs '90; 0.0.1 & 1 inf egg '91
AC2	m	unknown	12-13-86/adult	unknown	SDWAP	(bred in wild)
Inaja	f	05-09-84	84/egg	7 years	SDWAP	
Sequoia	m	05-16-84	09-15-84/chick	7 years	LAZ	1 inv egg '90;
Sespe	f	05-25-83	83/egg	8years	LAZ	1 inv egg '91
Sisquoc	m	03-30-83	83/egg	8 years	SDWAP	1 egg broken '90;
Tecuya	f	04-05-83	83/egg	8 years	SDWAP	1 broken & 1 inf egg '91
Xolxol	m	05-01-82	08-13-82/chick	9 years	SDWAP	1 inf egg '90;
Ojai	f	04-11-84	84/egg	7 years	SDWAP	1 inf egg '91
Topa-Topa	m	66	03-03-67/juvenile	25 years	LAZ	2 inf eggs '91
Malibu	f	06-10-85	85/egg	6 years	LAZ	
AC6	m	unknown	04-06-86/adult	unknown	LAZ	0.0.1 & 1 egg '91
Pismo	f	06-10-84	84/egg	7 years	LAZ	
AC9	m	05-01-80	04-19-87	11 years	LAZ	1 inv egg '90;0.0.2
Squapuni	f	06-01-84	84/egg	7 years	LAZ	& 1 egg '91
Tama-Yawut	f	unknown	09-06-85/adult	unknown	LAZ	(bred in wild)
Piru	f	04-09-84	84/egg	7 years	SDWAP	
Nojoqui	m	06-06-86	86/egg	5 years	SDWAP	
Molloko	f	04-29-88		3 years	SDWAP	

California Condor - Back from the Brink, Continued

<u>name/ID</u>	<u>sex</u>	<u>hatched</u>	<u>captured/status</u>	<u>age</u>	<u>location</u>	<u>captive breeding</u>
Mandan	m	04-19-89		2 years	LAZ	
Towasinah	f	05-18-89		2 years	SDWAP	
Kaduku	m	05-21-89		2 years	SDWAP	
Shasta	m	06-06-89		2 years	LAZ	
Chuhlna	F	03-12-90		1 year	SDWAP	
Honsi	F	03-22-90		1 year	SDWAP	
Kareya	F	03-23-90		1 year	LAZ	
Oneia	M	04-10-90		1 year	SDWAP	
Tumusai	M	04-15-90		1 year	LAZ	
Maluk	M	04-25-90		1 year	LAZ	
Sulu	F	05-10-90		1 year	SDWAP	
Shatash	F	05-25-90		1 year	LAZ	
Moko	?	03-17-91		<1 year	LAZ	
Pawoco	?	03-30-91		<1 year	LAZ	
Otum	?	04-01-91		<1 year	SDWAP	
Tsuts	?	04-06-91		<1 year	SDWAP	
Xewe	?	04-08-91		<1 year	LAZ	
Rotciwi	?	04-24-91		<1 year	LAZ	
Preghawish	?	04-26-91		<1 year	LAZ	
Kitsuk	?	04-28-91		<1 year	LAZ	
Hoinewut	?	05-08-91		<1 year	LAZ	
Teneiya	?	05-25-91		<1 year	LAZ	
Nagca	?	06-03-91		<1 year	LAZ	

S. Kasielke (06-3-91)



Publications Available

We have been notified of the availability of the following publications and information on each is printed here as a service to the membership. Publication of this information does not imply endorsement on the part of AAZK or Animal Keepers' Forum.

Publications Available from the U.S. Government

Fish and Wildlife '90 - the return of the endangered bald eagle, the fatal lure of oil pits for unwary birds, and the conservation efforts of "Garfield the Cat" are just a few of the stories told in this 48-page report highlighting USFWS activities during 1990. Limited quantities available from U.S. Fish and Wildlife Service, Publications Unit, 18849 C St., NW, Mailstop 130 ARLSQ, Washington, DC 20240.

The National Wildlife Refuge System - a companion piece to the guide The National Wildlife Refuges, this brochure describes how the nation's 90 million acres of refuges protect and enhance valuable fish and wildlife resources. Information on wildlife management programs and recreational opportunities on refuges is included, along with a map of the system's more than 460 refuges. Available for 50 cents from the Consumer Information Center, Pueblo, CO 81002. The National Wildlife Refuges is also available at this address for \$1.00.

Federal and State Endangered Species Expenditures - during 1990, state and federal agencies spent more than \$102 million to protect and enhance populations of endangered species. This report, which tallies expenditures by species, is available from the USFWS's Publication unit at the address listed for Fish and Wildlife '90 above.



Conference '91

1991 AAZK National Conference Australasian Rap Session Wednesday, 9 October at 7:30 p.m.

Once again the Australasian Rap Session will be held during the 1991 National AAZK Conference in Toledo. The session continues to grow and I urge anyone who works or is interested in Australasian animals to attend. The session is informal, but we will have access to slide and video projectors. If you have some interesting item to share please contact me so I can schedule time for everyone. After the short presentations we usually have a question and answer period, then break up into smaller groups and just "rap". Many interesting ideas and questions are shared. Also keeping with tradition we will have door prizes. If anyone has interesting books, T-shirts, do-dads, etc...that pertain to Australasia and would like to donate them, please let me know. If you have any questions or want more information, please contact: Scott M. Wright, c/o Cleveland Metroparks Zoo 3900 Brookside Park Drive, Cleveland, OH 44109 (216) 661-6500 Ext. 237 Sat. thru Wed. FAX (216) 661-3312 Home (216) 225-7635.

Calling All Animal Imitators

During the past AAZK conferences, the sounds of gibbons have been heard through the hotel halls and bars, and we've often wondered if there are other fascinating animal sounds that the delegates enjoy making. As part of our Zoolympics at the Toledo Conference, those brave individuals will get a chance to go public with their creations during the "Animal Imitation Contest". These will include vocalizations and body gestures. The categories will be: birds, mammals, reptiles/amphibians, fish and insects. Contestants will be judged on their ability to mimic the animal they have chosen. (Entrants must choose one category only.) Prizes will be awarded to one winner from each category.

Please fill out the form below if you are planning to participate.

Name _____

Address _____

Telephone () _____

Organization _____

Category (please specify the species of animal you will be imitating)

Birds _____

Mammals _____

Reptiles/Amphibians _____

Fish _____

Insects _____

Please return this form to: Toledo Chapter AAZK -
Entertainment Committee, P.O. Box 4010, Toledo, OH 43609.
Entries must be postmarked no later than 30 September 1991.

HOTEL REGISTRATION REQUEST

1991 National AAZK Conference

October 6-11, 1991

Toledo, Ohio



2429 South Reynolds Rd.

Toledo, Oh 43614 • (419) 381-8765

Name _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____ Telephone # () _____

Arrival Date _____ Check-out Date _____

Room guaranteed by: _____ Mastercard _____ VISA _____ American Express

Credit Card # _____ Expiration Date _____

OR

_____ Check for one night's lodging (make check payable to Holiday Inn Southwyck). A 72-hour cancellation is required for a deposit refund.

Accommodations Requested:

Standard Room (1-4 persons) \$58.00 _____

Executive Tower (1-4 persons) \$68.00 _____

I will be sharing a room with _____

Check-in time is 3:00 p.m.. Check-out time is 11:00 a.m. For additional information, please call the Holiday Inn Southwyck at (419) 381-8765. Reservation deadline is 15 September 1991. Thank you.

Return this form to:

HOLIDAY INN SOUTHWYCK
2429 South Reynolds Road
Toledo, Ohio 43614

1991 AAZK Conference Registration Form

October 6-11, 1991
Toledo, Ohio



PLEASE TYPE OR PRINT
(one name only per form please)

Name _____

Address _____

City _____ State/Province _____

Zip/Postal Code _____ Telephone # () _____

Zoo Affiliation _____

AAZK Committee Member _____

Is this your first AAZK Conference? ____ YES ____ NO How many attended? ____

I will be submitting a paper ____ YES ____ NO
(\$25.00 will be refunded from registration fee upon acceptance of paper)

Participating in Zoolympics? ____ YES ____ NO

I am bringing an auction item ____ YES ____ NO

Vegetarian ____ YES ____ NO Please specify type _____

I am interested in a Conference T-shirt? ____ YES ____ NO (S M L XL)

ARRIVAL date and time: _____

AAZK membership status and fees:

Member or Spouse	\$70.00
Non-member	\$85.00
Late Fee	\$10.00 (after 1 September 1991)
Total fees enclosed \$	_____

PLEASE NOTE that registration fee DOES NOT include the Conference Proceedings.
Information on how the Proceedings will be handled for 1991 will be published later.
Registration Fee DOES include ALL LUNCHES during the week.

Daily rates for individual events are available.
Contact Wayne Carpenter - Days (419) 385-5721 Evenings (419) 874-9913

Please make checks payable to: Toledo Zoo Chapter AAZK

Return this form with fee to: Toledo Zoo AAZK Chapter, Conference '91, 2700 Broadway,
Toledo, OH 43609

Pre-Conference Hoopla in Columbus

As stated last issue, Hozer and Elvis are having TOO much fun in Ohio's Capital City! After getting "wasted away" at the Jimmy Buffet concert at the Capital Music Center in July, they are spending the dog days (and nights) of August at the Ohio State Fair. Therefore, to assure their attendance at the 1991 AAZK Conference in Toledo, drastic steps have to be taken. That's where you folks come in. At the closing party (Sat., Oct. 5th) of our pre-conference event, two names will be drawn from a list of participants to be the official Hozer King and Queen. These two lucky souls will escort the wayward amphibians to Toledo on Sunday, Oct. 6th to make sure they get to the Icebreaker. (Columbus folks just can't be trusted to do this; we've become too attached to the lil' party animals!) Crowns and an escort vehicle will be provided. Surely no AAZK member will want to pass up this unbelievable chance to be a Hozer hero or heroine, so fill out the form below and join us in Columbus Oct. 4 and 5. (P.S. Answering the last question on the form is optional!)

1991 Columbus Pre-Conference Registration

Name _____

Address _____

Telephone () _____ Organization _____

Vegetarian YES ____ NO ____ Please specify type _____

Arrival date and time _____

Do you think zoo animals should be permitted to do intimate acts in public?

_____ No, it's too embarrassing for parents to explain to tykes!

_____ Yeah, right, just go ahead and try to separate a pair of moose or Cape buffalo in the heat of passion!

_____ Go ahead, make up your own response; just keep it clean!

Please return to:

Carl Gyarmaty
Columbus Zoo AAZK
P.O. Box 1256
Powell, OH 43065.



from the editor's desk

Andy Lodge called on 5 July following his return from Kenya. He reported that using the truck purchased with funds from the 1990 "Bowling for Rhinos" event, they had moved 150 giraffe from the Ngare Sergoi Rhino Sanctuary to Lewa Downs. The giraffe population within the boundaries of the Sanctuary is so large that they are doing extensive damage to the foliage and ecosystem. Of these 150 animals, 56 have been moved from Lewa Downs to other national parks in Kenya. Fifty-two have been translocated to Samburu National Park and four to Meru National Park. The plan is to eventually move at least 500 giraffe out of both the Rhino Sanctuary and Lewa Downs to Samburu and Meru National Parks. This will both restock the parks where poaching has been heavy and also relieve the pressure this large number of giraffe put on Ngare Sergoi. The translocation of these giraffe was only possible because of the truck which AAZK purchased for the Sanctuary last year---Andy said many giraffe would have had to have been shot if the translocation had not been possible.

Andy also reported that four Black rhino on the Sanctuary are pregnant. One White rhino has been dehorned and released in the wild where it is under constant surveillance by trackers. Andy also reported that 13km out of the total of 56km of the solar-powered fence has been completed at Ngare Ndare Forest Reserve. This is the first and largest effort of its kind to be undertaken in the country's history. Andy reports that there has been very positive reaction from the local farmers who can now raise their crops successfully without the constant worry of the elephants trampling their efforts or possibly injuring them or their families.

The area now protected includes Ngare Sergoi Rhino Sanctuary and Ngare Ndare Forest Preserve, a total of 110,000 acres. Much of this is old-growth forest areas which are now safe from development or devastation by encroaching agricultural uses.

The light airplane which was also purchased from money raised during last year's "Bowling for Rhinos" event is in constant use for everything from doing elephant population counts to tracking poaching activity. Both the truck and the airplane sport the AAZK rhino logo of their sides (see accompanying photos).

Andy was invited to Nairobi by Richard Leakey, head of the Kenyan Wildlife Service. Leakey wanted to express his thanks to Andy, the Ngare Sergoi Support Group and especially all the AAZK members who have helped raise the money for this important conservation project.

Andy says, and he is certainly correct, that every AAZK member should be justifiably proud of the contribution they have been able to make to this active conservation effort. This effort is paying off in very large ways and will continue to do so for generations to come. From everyone from the local Kenyan farmers to the head of Kenya's Wildlife Service, a big thank you to you all. S.C.

(Andy has a new slide presentation and video which include the giraffe translocations and rhino release. He is always available to visit your zoo and update you on what's been happening at Ngare Sergoi Rhino Sanctuary and Ngare Ndare Forest Reserve. You may contact Andy at NSSG, Inc., P.O. Box 29503, Columbus, OH 43229 or call (614) 885-0458.)

(Editor's note: the following letter was faxed to the AAZK Membership c/o Nanci Pintavalli and forwarded on to our office for publication here.)

7 July 1991

Dear Friends,

On behalf of everyone concerned, we would like to thank your organization for all the help and input that you have provided to assist in the management of the Ngare Sergoi Rhino Sanctuary and Lewa Downs.

From the Editor's Desk, Continued

The Super Cub, which now proudly wears your emblem over Kenya, was operational on our return from America in early November. She has now flown nearly 200 hours in the 8 months since she arrived. She was involved in the successful translocation of a group of Sitatunga from a swamp in Western Kenya, where they are threatened, to Lewa, and has also done a considerable amount of Elephant surveillance together with all the general flying involved with the management of the sanctuary and forest.

The lorry arrived in February - we cannot tell you the excitement! We had a special body constructed in Nairobi to carry the Giraffe and the first capture took place in March. The second phase took place in June/July and 56 animals were moved to two nearby National Parks. This was the first capture operation of this scale carried out in the country and to date it has been more successful than can ever have been hoped for. This operation could certainly not have happened without your great generosity and amazing efforts in providing the lorry. It is planned to start capturing again in September and we foresee these captures going on over a period of several years until we have reduced the number of Giraffe to a sustainable level.

The Ngare Ndare Forest fence is progressing well with 18kms finished as of today and a further 10kms expected to be finished by the end of the month. This fence is considered a pilot project by the Kenya Wildlife Service, as was described to Andy Lodge by the Director Dr. Leakey. Since the construction of the fence along the forest there have been no incidents of elephants breaking the fence or raising any of the adjoining farmlands. The enthusiasm and appreciation by the local people from this work was clearly shown to Andy when he visited the project in June. We have already started to receive money from this year's fantastic bowling effort for the forest project and we cannot adequately express in words how grateful we all are, except to say without your help we doubt that we would have even started the fence by now.

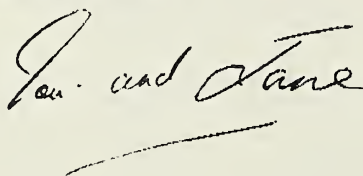
The money that you so kindly raised for Tim Ward Booth, we have never had the opportunity to thank you for. This most generous donation we all warmly appreciate and plan to use for an old peoples' home nearby, where there are many of Tim's old friends, in order to remember and appreciate all that Tim did for the area.

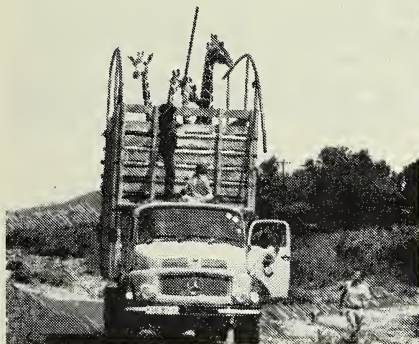
Overall, we and this Country have a great deal to thank you for- this was clearly stated to Andy by Dr. Leakey. Please remember that all concerned out here appreciate fully every individual effort and we also are committed to try to keep the welfare of this ecosystem as close as is humanly possible to its original pristine state.

We really look forward to meeting the two winners of the Bowling for Rhinos out here in Kenya and returning just a little of the amazing hospitality we were shown in New Orleans by so many friendly people.

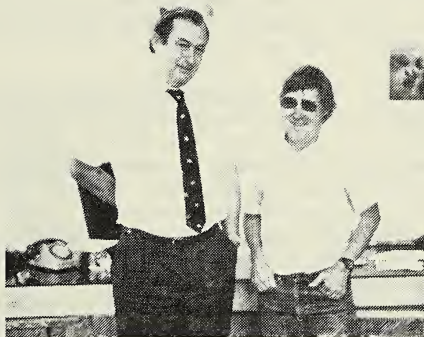
Best Wishes,

Ian and Jane Craig

A handwritten signature in cursive script that reads "Ian and Jane". The signature is written in dark ink and is positioned to the left of a small illustration.



Photos clockwise: the AAZK-purchased truck translocating giraffe; a close-up of the truck showing the AAZK rhino logo on its door; Andy Lodge meeting with Dr. Richard Leakey, the Director of the Kenyan Wildlife Service; and the Super Cub airplane, also sporting the AAZK rhino logo, which is used for elephant counts, herding and poacher tracking. (Photos courtesy of Andy Lodge, Ngare Sergoi Support Group)



Non-Domestic Neonatal and Medical Care Conference

Summary of Proceedings

*submitted by Karla Michelson, Lead Keeper
Infant Isolation Unit, San Diego Wild Animal Park
San Diego, CA*

The Neonatal Symposium was held at the Wild Animal Park on 5 March 1991. The symposium encompassed both the San Diego Zoo's and the Wild Animal Park's nursery facilities. Following are abstracts of the papers presented. If you would like further information please contact Karla at the San Diego Wild Animal Park, Infant Isolation Unit, 15500 San Pasqual Valley Rd., Escondido, CA 92027.

Factors Influencing Neonatal Infections

Jeffery R. Zuba, DVM - Assistant Professor, Zoological Medicine Service,
College of Veterinary Medicine, Colorado State University

ABSTRACT: Infectious disease in the neonate is dependent upon many factors including the ability of the neonatal host to adequately defend itself; the ability of the neonate's mother to provide temporary immunity via colostrum or the placenta; the disease potential of the environment in which the neonate is delivered; and the ability of the infectious agent to cause disease in a particular host. If any of these factors compromise or overwhelm the newborn the potential for disease is greatly increased. Neonatal infections are well known to cause significant illness and death in man and domestic animals - zoo animal neonates (bird, mammal, reptile) are no exception. Therefore, understanding the mechanisms of the infectious disease process in the newborn will allow for its control and prevention. Factors predisposing the neonate to disease, strategies for prevention and the physiology and importance of colostrum in certain species was discussed.

Diarrhea in Neonatal Hoofstock: An Overview

Meg Sutherland-Smith, DVM - Veterinary Resident, San Diego Zoo

ABSTRACT: In a broad sense neonatal diarrheas can be divided into two basic categories: infectious and non-infectious. This talk will focus on predisposing factors, clinical signs, pathophysiology, diagnostics, treatment, and preventative measures with the emphasis on infectious causes. Predisposing factors include: colostrum (quality and quantity ingested); environmental conditions (e.g. adverse weather conditions, crowding); and concurrent disease or injuries. Once diarrhea is recognized, rarely can a diagnosis be made solely on appearance of the stools.

One mechanism for how diarrhea develops is by destruction of the cells that line the intestine by viruses, bacteria, and/or parasites. These cells function in digestion and absorption of foods so a maldigestive/malabsorptive diarrhea results. Rota and Corona viruses cause diarrhea in this manner. Another mechanism for how diarrhea develops is through hypersecretion of fluids by the intestinal cells. Certain types of bacteria, e.g. *E. coli*, secrete a toxin that causes cells to secrete an overabundant amount of water, electrolytes, and bicarbonate resulting in dehydration, electrolyte and acid-base imbalances.

Attempting to diagnose the cause of the diarrhea involves fecal exams, fecal cultures, electron microscopy (to detect viral particles), as well as special fecal stains looking for certain parasites such as *Cryptosporidia*. Blood sampling is indicated in certain cases to evaluate the complete blood count and serum chemistries. Treatment in most cases consists of supportive care with fluids (oral, subcutaneous, or intravenous). Antibacterial and anthelmintic therapy should be considered based on diagnostic test results. Isolation of infected animals and strict hygiene are essential in the prevention of further cases.

Non-Domestic Neonatal and Medical Care Conference, Continued

Eavesdropping on Our Animal

Jean Hoch - Lead Keeper, Children's Zoo, San Diego Zoo

ABSTRACT: Because we belong to a species primarily dependent on verbal communication, we often tend to overlook, ignore, or misapply the non-verbal signals of posture and gestures that form the primary language of most species. Facial expressions, tail positions, posture, head, horn or antler presentations, neck movements, frontal and broadside displays can indicate to those who know species behavior patterns the intensity of intent, and whether "fight or flight" is imminent.

By understanding threat and dominance displays of the various species in our care, we help to insure the safety of ourselves and our animals.

Hand-Rearing Macropods

Laurie Middleton - Nursery Keeper, Los Angeles Zoo

ABSTRACT: Hand-rearing macropods is a very lengthy and tedious procedure, and the management techniques are very different from those of other animals. Macropod joeys go through five stages of development and must be managed according to each stage. Several factors must be carefully and constantly monitored, such as sanitation, diet, housing, temperature, humidity, hydration and stress. This paper is to be used as a general guideline for hand-rearing macropods. With patience, commitment, and proper management, this can be a very successful and rewarding experience.

Egg and Hatching Care of Reptiles

Susan Schafer - Assistant Curator of Herpetology, San Diego Zoo

ABSTRACT: A general review of the techniques used at the San Diego Zoo in caring for reptile eggs and their hatchlings. The conditioning of gravid females prior to egg laying; nesting requirements; the effects of container size, moisture and temperature on the eggs; incubation time; and the treatment of hatchlings as they hatch from the egg were discussed.

Basics of Avian Neonatal Care, Including Effects of Egg Incubation on Chick Quality

Jackie Good - Lead Keeper, Avian Propagation Center, San Diego Zoo

ABSTRACT: Aspects of hand-rearing avian neonates were discussed, including housing, brooder temperature, diet formulation, feeding techniques and tools. Special considerations, such as monitoring weight gains, evaluating chick feeding responses, weaning chicks, exercising chicks, providing proper substrate for proper toe and leg development, and monitoring chick interactions were illustrated with specific examples drawn from eight years of experience with a wide variety of species, ranging from kiwis to laughing thrushes.

Artificial incubation of avian eggs, especially to effects of temperature, humidity, turning and hatching conditions on initial chick quality, was also discussed.

Pulse Oximetry: Everyday Uses in a Zoological Practice

Jack L. Allen, DVM - Associate veterinarian, San Diego Wild Animal Park

Amy Chaddock, AHT - San Diego Wild Animal Park

ABSTRACT: The ability to monitor a patient's blood oxygenation is a valuable clinical tool. In veterinary medicine, this is commonly done with blood gas analysis, which is a

Non-Domestic Neonatal and Medical Care Conference. *Continued*

measure of the partial method including difficulty of direct arterial puncture, poor patient cooperation, blood vessel trauma after multiple punctures and the need for prompt laboratory analysis.

Pulse oximeters provide information about the oxygen in blood that is bound to hemoglobin. This is referred to as the oxygen saturation (SaO₂). This non-invasive monitoring technique is easy to perform and provides continuous data regarding blood oxygenation.

This presentation reviews both theory and instrumentation of oximetry as well as clinical applications adapted for everyday use in a zoological practice.



Chapter News

Greater Kansas City AAZK Chapter

We recently elected new officers.
They are:

President.....Jacque Blessington
Vice Pres.....Norma Haynes
Secretary.....Kathy Moore
Treasurer.....Dee Wolfe

In April we held our annual "Bowling for Rhinos". There was a really good turn-out of bowlers and \$2700.00 was raised. This is an event that originated in Kansas City.

--Kathy Moore, Chapter Sec'y

San Diego AAZK Chapter

June Program...the Annual AAZK Evening Monorail Tour at the Wild Animal Park was another adventure in fun and education. Special thanks to our guides Bird Curator Bill Toone, Field Keepers Lance Aubery and Vickie Steele, and our driver Phoenix Lindern from WAP Transportation.

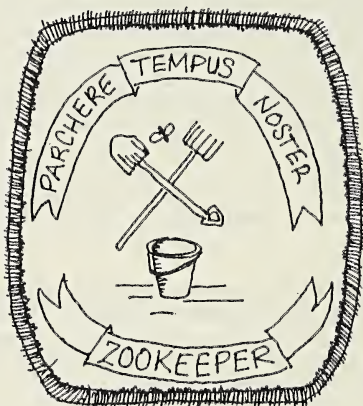
Apologies to Jacquie Dubow, Terri Peterson (Zoo Hosp.) and Cindy Woodward (Zoo Buses) who also accompanied Michael Werikhe on his San Diego Rhino Walk in May, but were not mentioned in June's AKF report.

--Mary Dural, Chapter Liaison

EFBC Chapter AAZK

The Exotic Feline Breeding Compound AAZK Chapter proudly presents.....

"THE PATCH"



Complete with flies and a poop bucket, and detailed in two shades of blue, white and gold, this designer item is for the serious collector only. Immortalized in Latin are the words "...in my spare time.." - the cry of overworked Keepers everywhere. **LIMITED EDITION - DON'T DELAY!** Cost per patch is \$4.50 tax included. Order from: AAZK/EFBC, HCR 1, Box 84, Rosamond, CA 93560.

--Julie Abraham, Chapter Liaison

Chapter News, Continued

San Antonio Zoo AAZK Chapter

Officers for 1991 are:

President.....Ann Marie Greco
Vice Pres.....Dismas Dominguez
Secretary.....Kris Harrison
Treasurer.....Mark Hood
Chapter Liaison...Bryan Sepp

Gilbert Perez was Treasurer the first half of the year and Bryan Sepp just moved to the Ft. Worth Zoo so we will need a new Liaison.

Last year our "Bowling for Rhinos" event was kept very low key. This year it was tremendous with media coverage and celebrity bowlers. A lot of hard work and long hours were put in by Chairman Gary Kirkwood, Co-Chair Cheryl Powell and many assistants like Terry Fisher. Our "Bowling for Rhinos" was an all-day event held 11 May. Eighty-three bowlers participated raising approximately \$2700 including donations.

We have T-shirts from this event available in black with white print. On the front is a rhino crashing straight-on through bowling pins with the words "Make a Strike for Rhinos" and on the back is a rear view with all the sponsors listed below. These are available in L - XL - XXL for \$11.00 each from SAZ-AAZK Chapter, 3903 N. St. Mary's St., San Antonio, TX 78212. Make checks payable to SAZ-AAZK Chapter.

--Ann Marie Greco, President

Houston Zoo AAZK Chapter

The Chapter elected the following officers for 1991:

President.....Elyse Farrel
Vice Pres.....Lynn Klein
Treasurer.....Cathy Putter
Chapter Liaison.....Colette DeGrange

The Chapter participated in its first "Bowling for Rhinos". The response both from keepers and zoo docents was tremendous. We had numerous bowlers and contributors, with some

sponsors donating hundreds of dollars. Even local companies and the Zoological Society Gift Shop got involved and donated prizes and incentives for the bowlers. All in all, our first "Bowling for Rhinos" was a huge success. We are already looking forward to next year.

The Chapter is starting many new projects including a newsletter which we hope will encourage and supplement keeper communication. Our ongoing recycling project continues to support our Chapter activities and allows the public a way to support the Houston Zoo and our zookeepers' activities.

Through the generosity of a dedicated donation to the Houston Zoo AAZK Chapter, travel and other expenses were sponsored for one of the Snake Advisory Group members attending the 1991 AAZPA Herpetological Taxon Advisor Group Meeting in Oklahoma City from Feb. 27-March 3, 1991.

David Luzcamo, the Curator of the Herpetological Live Specimen Collection at the University of Monterrey in Nuevo Leon, Mexico, is responsible for administering funds and contacting biologists in Mexico to conduct preliminary surveys of available habitat suitable for rattlesnakes and palm vipers. The Houston Zoo AAZK Chapter has given printed materials and equipment to the University of Monterrey over the last several years in support of their educational efforts.

--Colette DeGrange, Chapter Liaison



Breeding of the Writhe-Billed Hornbill

(*Aceros l. leucocephalus*)

At Miami Metrozoo

By
Dolora Jung, Bird Keeper
Miami Metrozoo, Miami, FL

The Writhe-billed Hornbill (*Aceros l. leucocephalus*) is indigenous to the lowland forests near the coasts of two islands, Mindanao and Camiguin South (Delacour & Mayr, 1946 & 1947).

PHILIPPINES



Breeding of the Writhe-billed Hornbill at Miami Metrozoo, Continued

The male hornbill's total body length is about 72cm with a wing span of approximately 125cm. The red bill exhibits a short wavy casque on the maxilla and grooves at the base of the lower mandible. He also has red skin around his eyes and chin, black plumage, and a terminal black band on a white tail. (See Photo A). The female resembles the male but displays a black head and is about 10% smaller. (See Photo B).



PHOTO A - shows the male Writhe-billed Hornbill and the 72-day-old chick. (Photo by Dolora Jung)



PHOTO B - shows the female Writhe-billed Hornbill on top of the nest barrel. *(Photo by Dolora Jung)*

Metrozoo's Writhe-billed hornbills are exhibited in Wings of Asia, a 0.6 hectare (1.5 acre) free flight aviary. Shaped like a figure eight, the aviary's central towers are 19.5m in height, decreasing to 12 meters around the perimeter. (See Aviary Map). A pedestrian walkway winds through a tropical moist forest on the south side and a marshy environment to the north. Other features include recirculating pools, waterfalls, bridges and an

Breeding of the Writhe-billed Hornbill at Miami Metrozoo, Continued

observation deck. Lush and varied subtropical plants are used to represent a Southeast Asian rainforest. Fruit trees, palms, shrubs and ground cover provide perching, protection, nesting sites, nesting materials, and a supplemental food source.

Three large enclosures adjacent to the main aviary all display one species of hornbill with other compatible species of birds. The Writhe-billed hornbills inhabit the main aviary with about 70 species (300 specimens) of Asian birds. In January of 1985, a four-year-old pair of wild-caught Writhe-billed hornbills were acquired. After a thirty-day quarantine period, they were temporarily housed with a pair of Great Indian hornbills (*Buceros bicornis*). The two hornbill species proved to be incompatible and within two months the Writhe-billed hornbills were released into the main aviary. For the next three years this pair was inseparable. Courtship behaviors such as head preening, sharing food, vocalizations and flying together were exhibited by both.

The staff selected a 55-gallon plastic pickle barrel as a potential nest because of its large size, light weight and durability. The barrel cavity measures 80cm by 54cm. The entrance measures 9.3cm by 26.5cm and is 14.8cm above the bottom of the barrel. Rope was sewn around the entrance to provide an adherent surface for mudding materials. The keepers placed a 12.5cm layer of damp sphagnum moss and wood shavings inside the barrel. A location was selected on the south side of the aviary (see Aviary Map). A hardwood perch was attached to the base of the barrel then erected on top of a 4.2m plumbers pipe. The barrel was adjusted so the entrance would face north away from the other hornbill enclosures. This project was completed in February 1988.



Breeding of the Writhe-billed Hornbill at Miami Metrozoo, Continued

After about four weeks the pair were observed investigating the nest barrel. The male would fly with food in his beak to the nest, followed by the female. He would then feed her at the entrance and later, after she entered the nest, would feed her through the entrance. While inside the nest, the female began smearing mud on the barrel's inside wall and entrance. Plastering materials, provided by both, consisted of regurgitated meat and mice, feces, soil and mulch. On 29 March 1988 the female had sealed herself inside leaving an opening of 2.5cm by 24.8cm. For the following forty-three days the male fed the female several times a day. During the hottest afternoon hours a sprinkler was turned on above the barrel to prevent overheating. On the morning of 10 May 1988, a week-old hornbill chick was found dead in the north pond; a necropsy revealed pneumonia. The male continued feeding the female until 15 May 1988 when she exited the nest.

Prior to the 1989 breeding season, the nest barrel was removed and modifications were made to reduce humidity and stabilize temperature. The entire barrel was sprayed with a 5cm layer of foam insulation (provided by U-Back Insulation) then sealed with a thick coat of epoxy. Small holes were drilled through the bottom to provide drainage. (See Photo B). Moss and wood shavings were added and the barrel was erected on 11 February 1989. The tower sprinkler remained off through the nesting cycle.

By 16 March 1989 the female was inside the barrel accepting food from the male. During the next seven days the female laid two eggs while still plastering the entrance. Twenty-three March marked the beginning of the 120-day period in which the female depended totally on the male for food. On 20 April 1989, 29 days after the confinement period started, the keepers heard faint vocalizations which confirmed the eggs had hatched. At two months of age the chicks were observed peeking through the narrow entrance. During this confinement period the female molted.

In the morning of 20 July 1989, the female was heard tapping on the inside of the barrel. At 1400m hours, during a light drizzle, two 92-day-old chicks and the hen enlarged the entrance and flew from the nest to a nearby tree. The juvenile plumage of both chicks had male characteristics but within four and a half months molted into female plumage. The pair shared the responsibility of gathering food and feeding the chicks.

On 29 August 1989 keepers observed both parents and juveniles at a food station. By 3 October 1989 both chicks were catching meat and fruit fed by the keepers. The parents were observed showing interest in the nest in August and October. The adult pair and the older chick constantly harassed the smaller chick. By 10 January 1990 this chick was transferred to a holding pen. She died on 29 January 1990 from an injury by a predator. The older chick was transferred to a holding pen on 26 February 1990, then shipped to the San Diego Zoo on 22 June 1990.

At the time of fledging the smaller of the two chicks was captured and treated for an ulcerated cornea of the left eye. Thrashing about inside the nest may have caused the injury. The eye appeared to be improving when examined on 23 October 1989, but by 10 January 1990 the cornea had filled with blood, blinding the infected eye.

The 1990 nesting season began on 12 December 1989 after the nest barrel was cleaned and new materials were added. The female began plastering on 19 January 1990 and copulation was observed on 4 February and 11 March 1990. The female was inside the nest mudding again on 18 March 1990, but did not seal herself inside until 7 May 1990. She abandoned the barrel on 29 May 1990. We once again cleaned the barrel and new nest material was added. On 8 June 1990 the female began sealing the entrance. The confinement period began on 12 June 1990. A single chick was heard vocalizing on 4 August 1990. There was no sign of this chick on 23 August 1990 when the female flew out and the nest was checked.

At the beginning of the nesting season on 11 February 1991 the male died suddenly from a hepatic rupture with acute hemorrhage. The female seemed distressed for about a week. She flew from tower to tower emitting loud vocalizations. Since then we have received a male from the San Diego Zoo which will be introduced this summer.

Breeding of the Writhe-billed Hornbill at Miami Metrozoo, Continued

Three methods of acquiring food are available to the hornbills. Observations have revealed that a small portion of their diet is foraged from the sub-tropical foliage. Carpentaria and Queen Palm berries, Asparagus Fern berries, Royal Poinciana seed pods, earthworms and crushed snails are examples of the variety of foods eaten by hornbills.

Prepared diets are distributed throughout the aviary at ground level stations during the day and elevated platforms during the early evening and morning hours (See Appendix I). This comprises the second most important food source.

In November 1987, three Goldies lorikeets (*Trichoglossus goldiei*) were listed as missing and a Superb fruit dove (*Ptilinopus superbus*) died from an injury by a cage mate. On 18 April 1988 the male hornbill was observed feeding a freshly killed lorikeet to the hen in the nest. Two more lorikeets were missing by the end of April. A decision was made to incorporate dead mice in their diet, an animal protein of our selection. The keepers habituated the hornbills to catch mice and other foods tossed to them. 2.5cm balls of Bird of Prey® diet, ground horsemeat, softbill diet, small pieces of apple, papaya, mango and cocoplums were all tossed to the hornbills. Cocoplums were picked by keepers on the outside of the aviary and offered to the hornbills.

Food was offered by keepers whenever the male was attentively waiting. These times correlated with the daily feedings of the prepared diets (0700, 1100, 1500 and 1700 hours) usually from two to four feedings before hatching and increased to six feedings as the chicks grew. Keepers observed and recorded the hornbills consuming approximately 80% meat (mice, pinkies and ground horsemeat) and 20% fruit during the nesting season. These observations were of the amount of food taken from the keepers, not the free choice foods. The hornbill family consumed approximately 9 pinkies per day for the first 30 days and 5 mice per day for the first 98 days. Both mice and pinkies were preferred dead. Animal consumption decreased as fruit consumption increased at the time of fledging.

The male usually consumed several pieces of fruit or mice then carried the last piece in the end of his bill to the nest barrel. He would pass it through the nest opening to the female or would leave it in the entrance until she pulled it inside. Sometimes, if she refused the mouse, the male would consume it and would then regurgitate a piece of fruit.

The Writhe-billed hornbills utilized the available food, lush green habitat and nest barrel to breed successfully in the Wings of Asia at Miami's Metrozoo. An adequate supply of animal protein is essential if the hornbills are to live in harmony with other prey species. We believe this to be the first captive breeding of this species. It is hoped that our success and this paper will benefit other institutions.

References

- Delacour, Jean and Ernst Mayr. 1946. The Birds of the Philippines.
The Macmillan Company, New York, NY
Delacour, Jean. 1947. Birds of Malaysia.
The Macmillan Company, New York, NY

Products Mentioned in the Text

- U-Back Insulation Contractors, Inc., Miami, FL
Bird of Paradise Pellets, Zeigler Bros., Inc., Gardners, PA

Acknowledgements

- Co-Workers - Andres Mejides, Pam Monseur, Janet Johnson
Ex-Co-Workers - Holly Haviland and Kim Livingstone
Supervisor of Birds - Carl Burch
Curator of Birds - Ron Johnson

Special thanks to Joseph Namm, Brett Bannor and Mike Gerlach.

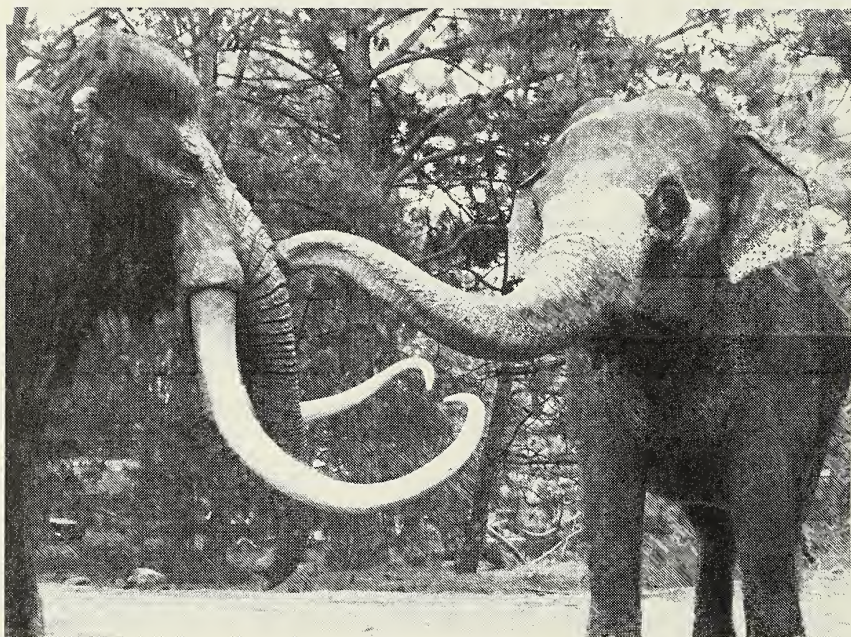
Appendix I

Diets Eaten By the Writhe-billed Hornbills

Soft Bill Diet:

Fruit Cocktail	3413 gm
Hard boiled egg	1187 gm
Skinned banana, chopped	1483 gm
Bird of Prey® Diet	594 gm
Necton S	4+

Bird of Paradise pellets, Zeigler Bros., free choice
Chopped Horsemeat, Nebraska Brand
Mealworms, waxworms, crickets
Apples and papayas, 2.5cm chunks
Grapes



An Asian elephant from the San Diego Wild Animal Park checks out a replica of its ancient ancestor, a Woolly Mammoth which is one of 24 creatures on display during the "From Dinos to Rhinos" exhibition. The prehistoric replicas, created by Dinamation International Corporation, will be on display in the four-acre Wild Woods at SDWAP until October 4th. While the Dinamation creatures have been seen by millions of museum and zoo visitors throughout the world, the Wild Woods exhibit marks the largest group ever seen in one place, and the first time they have been shown in a natural outdoor setting. Photo ©1991 San Diego Wild Animal Park. Photographer: Ron Garrison.



Book Review

Care and Handling of Australian Native Animals - Emergency Care and Captive Management

Editor Suzanne Hand 210 pgs.

Published by Surrey Beatty & Sons

P.O. Box 229, Bankstown 2200 Australia

in association with

the Royal Zoological Society of New South Wales

*Review by Tina Mullett
Zookeeper
Woodland Park Zoo
Seattle, WA*

This book is actually an expanded collection of papers that were presented at a symposium "The Care and Handling of Australian Native Fauna" held by the Royal Zoological Society of New South Wales in September 1986. "The aim of the symposium was to gather and promote discussions and interactions between those involved in the captive care and maintenance of Australian native animals," as stated by the editor, Suzanne Hand in her preface. It is an excellent reference guide for individuals who work with Australian animals.

The various contributors to this book have extensive experience in the care and handling of Australian native animals. This book deals with all aspects of animal care including emergency first aid, diets, housing and enclosure requirements, handling, breeding behavior and needs, diseases and parasites.

There is a brief but thorough overview of Australian native fauna, followed by chapters on the various groups of animals including freshwater fish, frogs, reptiles, birds, carnivorous marsupials, bandicoots, koalas, wombats, possums and gliders, kangaroos, marine mammals, bats and rodents.

I found each section to have a well-written overview of the particular animal group. As Arthur White points out in his section, "in order to be able to care for, handle and maintain frogs more specific details about their life history are required." This can be said of any of the groups of animals covered in this volume, and that is why I found the general overviews to be an important and valuable section of each chapter. Most medical and scientific terminology is well defined within the text. For further reading, there is a reference section following most chapters and in addition, the book contains a glossary of terminology which explains even the most basic biological terms.

In addition, specific husbandry information is also included. There is an abundance of very specific information, for example, breeding the Australian possums and gliders including gestations, litter size, litters per year, pouch life, weaning time, sexual maturity, and breeding seasons. Also included are growth charts for hand-raising macropods and fruit bats, and fruit bat infant formulas.

Since my background with fish is very limited, I found this section by J.R. Merrick to be well presented. He covered a broad range of topics including fish diversity, commercial species, feeding and diet, physiological tolerance, reproduction, handling, anesthetics, and diseases.

The avian sections were a bit weak. Included was a brief chapter on bird restraint and another on basic emergency first aid, which generally covered anatomy.

Book Review. *Continued*

Several chapters had practical useful information and techniques including Hellen Georges' two sections on the care and handling of orphaned macropods, and on hand-rearing gray headed fruit bats, and C.S. Hopkins' chapter on carnivorous and insectivorous bats. I found this author's section on conditioning bats to captivity interesting, as well as the specifics on diets and housing needs of these "MICRO BATS".

The two sections on amphibians and reptiles presented a good general overview, but lacked specific husbandry techniques. It was, however, a comprehensive introduction for those individuals who possess little or no herpetological experience. It covers the basics adequately.

All in all, I found this book to be thoroughly interesting, well written, and informative. It would be an excellent reference guide for any individual working with Australian animals, but particularly helpful for the novice keeper.

Zoo: The Modern Ark

Photographs by Franz Maier

Text by Jake Page

Facts of File, Inc. 1990.

460 Park Ave. S., New York, NY 10016

192 pgs. Hardback. Price \$35.00

*Review by Melba T. Brown
Keeper - elephants/pinnipeds
National Zoological Park
Washington, DC*

As the title suggests, Zoo: The Modern Ark focuses on the significance of present-day zoological institutions, both nationally and abroad, with a special emphasis on the preservation of rare species. The book is put together nicely with a preface by Gerald Durrell, the text written by Jake Page and many photographs mostly taken by Franz Maier.

I particularly enjoyed reading this book because the chapters are concise and full of interesting bits of information. For instance, when Page discusses the use of high technology in facilitating the successful breeding of selected species, he points out that certain temperatures are necessary for the survival of specific semen samples collected for artificial insemination: bulls and rams around 86° F (30° C); elephants and tigers around 70° F (21° C). He brings out the fact that breeding captive animals, especially endangered wildlife, is not an easy task.

There are several historical photographs throughout the book. At the conclusion of each chapter, there are wonderful portraits by Maier of zoo animals. These pictorial sections are grouped according to geographical regions: Northern Region, Africa and Arabia, Australia and Indian subcontinent, and Central and South America.

Also, there is a chapter that focuses on 'ten fine zoos' namely, Barcelona Zoo, Berlin Zoo, Frankfurt Zoo, Jersey Wildlife Preservation Trust, London Zoo, Bronx Zoo, San Diego Zoo, Taronga Zoo (Sydney, Australia), Metro Toronto Zoo, and The National Zoo (Washington, DC). Finally, there are three appendices which highlight other major zoos, wildlife conservation organizations and zoo terms, respectively.

Zoo: The Modern Ark is a high quality book that is so easy to read and understand that anyone who is not familiar with the inner workings of a zoo will come away from this book with a knowledge of what these wildlife institutions are faced with in the endeavor of successfully breeding and preserving endangered species.



L.I.N.K.
(Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 889-2919 [h].

Regional Coordinators

ALABAMA - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315
ALASKA - Vacancy
ARIZONA - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716
ARKANSAS - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens,
#1 Jonesboro Dr., Little Rock, AR 72205
CALIFORNIA - Vacancy
COLORADO - John Turner, Denver Zoo, City Park, Denver, CO 800205
CONNECTICUT - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905
DELEWARE - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104
NORTHERN FLORIDA - Betty Grogan, Jacksonville Zoological Park, P.O. Box 26767, Jacksonville, FL 32218
CENTRAL/SOUTHERN FLORIDA - Rick Smith, 11707 # 5 Park, Orchard Circle, Tampa, FL 33612
GEORGIA - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315
HAWAII - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Road, Honolulu, HI 96815
IDAHO - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103
ILLINOIS - Vacancy
INDIANA - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615
IOWA - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107
or Wendy Davis, Lake Superior Zoo, 7210 Fremont St., Duluth, MN 55807
KANSAS - Vacancy
KENTUCKY - Vacancy
LOUISIANA - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212
MAINE - Jeanette Nadeau (see addresses under CT)
MARYLAND - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA
MASSACHUSETTS - Jeanette Nadeau (see addresses under CT)
MICHIGAN - Vacancy
MINNESOTA - Wendy Davis, Lake Superior Zoo, 7210 Fremont St., Duluth, MN 55807
MISSISSIPPI - Vacancy
MISSOURI - Vacancy
MONTANA - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103
NEBRASKA - Carla Wieser (see address under Iowa)
NEVADA - Vacancy
NEW HAMPSHIRE - Jeanette Nadeau (see addresses under CT)
NEW JERSEY - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104
NEW MEXICO - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 857716
EAST NEW YORK - Mark Hofling, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460 (212) 220-7115 [w]
WEST NEW YORK - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204
NORTH CAROLINA - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203
NORTH DAKOTA - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba
Canada R3P 0R5 (204) 986-4040 [w]
OHIO - Vacancy
OKLAHOMA - Debbie Jackson or Ann Rademacher (see addresses under AR)
OREGON - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221
PENNSYLVANIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104
RHODE ISLAND - Jeanette Nadeau (see addresses under CT)
SOUTH CAROLINA - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203
SOUTH DAKOTA - Bob Debets (see address under ND)
TENNESSEE - Gail Karr, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112
TEXAS - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212
UTAH - John Turner, Denver Zoo, City Park, Denver, CO 800205
VERMONT - Jeanette Nadeau (see addresses under CT)
VIRGINIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104
WASHINGTON - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103
WEST VIRGINIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104
WISCONSIN - Karin Newman, Milwaukee County Zoo, 10001 W. Bluemound Rd., Milwaukee, WI 53226
WYOMING - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103
DISTRICT OF COLUMBIA - Theresa Maas (see address under PA)
Province of Ontario - Terry Male, Metro Toronto Zoo, Box 280, West Hill, Ontario
Canada M1E 4R5 (416) 392-5900 [w]
Provinces of Manitoba & Saskatchewan - Bob Debets (see address under ND)
Province of Quebec - Chantal Routhier, Granby Zoo, 347 Rue Bourget, Granby, Quebec, Canada J2G 1E 8
Provinces of Alberta & British Columbia - Dean Treichel, Valley Zoo, Box 2359, Edmonton, Alberta,
Canada T5J 2R7 (403) 483-5525 [w]

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKF, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-272-2539.

ANIMAL KEEPER...National Zoological Park/Smithsonian Institution. Performs routine duties in the care and maintenance of exotic, rare or endangered mammals. Will work with animals whose behavior may be erratic or unpredictable. Will participate in public education programs. Candidates should possess skill in the care, handling and feeding of mammals. Knowledge and/or experience in public education programs is preferred. Must work well in a team setting. Salary \$19,659.00 - \$22,978.00. Salary commensurate with experience. Applications must be received by **30 September 1991**. All applicants must submit a completed SF 171 (Application for Federal Employment) to: Smithsonian Institution, Delegated Examining Unit, P.O. Box 44819, ATTN: DEU 1-140, Washington, DC 20026-4819. Questions concerning this position may be directed to John Lehnhardt, Collection Manager, Elephant House/Pinnipeds, National Zoological Park, Washington, DC 20008, (202) 673-4804. AA/EOE.

ZOO ATTENDANT I...routine care of reptiles, birds and mammals at the Sacramento Zoo and related cleaning and maintenance necessary for their health and well-being. Requires 6 months' full-time experience working with captive, exotic animals. College level courses in biology, zoology and animal science or a related field are desirable. Education may be substituted for part of experience if in above fields. Salary \$1934.20 - \$2351.27/month plus benefits. Complete information and City of Sacramento applications available at 921 10th St., Room 101, Sacramento, CA 95814. Out-of-area applicants call (916) 449-5726 for application. Final filing deadline is **28 August 1991 5:00 p.m.**

RELIEF KEEPER...part-time position open for a relief keeper at Micke Grove Zoo in Lodi, CA. Duties include care and feeding of zoo animals, observation of animal behavior, preparation of animal diets, and routine exhibit maintenance. Some college level work in zoology or related field is desirable, as is some zoo experience. Must be knowledgeable about zoo animals and safety conscious. Must be able to effectively communicate with the public. Salary \$6.00 per hour, 16-32 hours per week; flexibility in scheduling is a necessity. For more information and application contact Susan DuBois, Curator, Micke Grove Zoo, San Joaquin County, Dept. of Parks and Recreation, 11793 N. Micke Grove Rd., Lodi, CA 95204 (209) 953-8840. **Closing date is Friday, 30 August 1991.**

ZOOKEEPER...requires high school diploma or equivalent and one year exotic animal experience. Responsible for the feeding, care and upkeep of a varied collection. Salary \$6.25/hr. plus benefits. Send resume by **31 August 1991** to: Liz Harmon, Curator, Great Plains Zoo and Delbridge Museum, 805 S. Kiwanis, Sioux Falls, SD 57104



Keeper's Alert

The International Society for Endangered Cats (ISEC) is seeking articles for their bimonthly publication. Articles are to reflect the personal experiences of the keepers who care for cats, both large and small. Please submit your article of approximately 500 words to the address below: Carolyn Curry, Mill Mountain Zoo, P.O. Box 13484, Roanoke, VA 24034.

AAZK Membership Application

Name _____ check here if renewal []

Address _____

City _____ State/Province _____ Zip _____

☐ **\$30.00 Professional**
Full-time Keepers

☐ **\$25.00 Affiliate**
Other staff & volunteers

☐ **\$25.00 Associate**
*Those not connected with
an animal facility*

☐ **\$40.00 International**
*All members outside U.S. & Canada
regardless of category*

☐ **\$20.00 Library**
Library subscription only

☐ **\$50.00 or up Contributing or Institutional**
Individuals & Organizations

Zoo Affiliation (if any) _____

Zoo Address _____

Mail this application and check or money order (U.S. CURRENCY ONLY PLEASE), made payable to American Association of Zoo Keepers, Inc., to : AAZK Administrative Offices, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606 U.S.A.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 6" x 10" (15cm x 25 1/2cm). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Black and white photos only accepted.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31. FAX # is 913-272-2539.

DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

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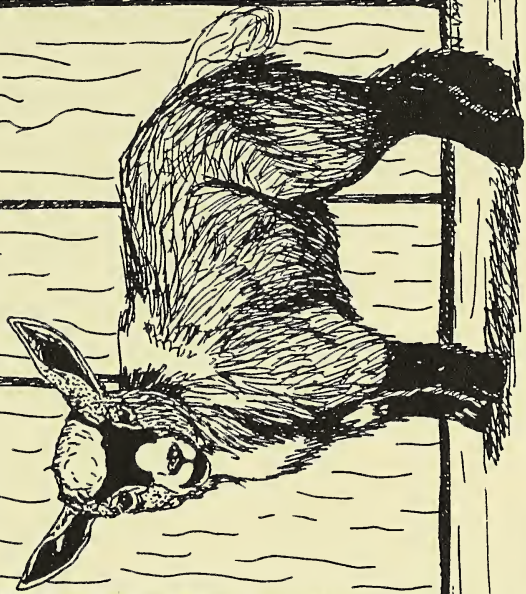
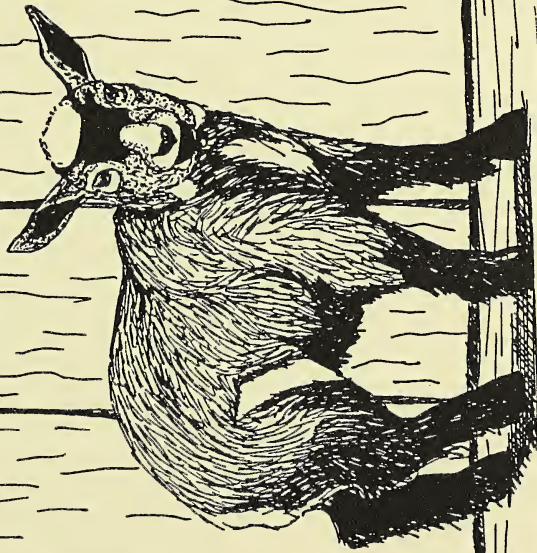
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Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of *Animal Keepers' Forum*. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

American Association of Zoo Keepers, Inc.
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Bernie Feldman, Burnet Park Zoo

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Keeper Accommodations List

Heidi Manicki, Metro Toronto Zoo

An Approach to Zookeeping

Pat Sammarco, Santa Fe Teaching Zoo

Zoo Infant Development Project

Harmony Frazier-Taylor, Woodland Park Zoo

AAZK Manual of Resources

Elandra Aum, Woodland Park Zoo

Exhibit Design Form

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Toni Danzig, Greater S. F. Bay Area Chapter

Legislative Advisor

John Stoddard, Chicago, IL

By-Laws Review

VACANCY

Zoo/University List

Mike Illig, Washington Park Zoo

Nominations & Elections

David Luce, Fresno Zoo

Zoonotic Diseases Notebook

Bruce Clark, Toledo Zoo

Keeper Training Videotape

Production Coordinator - Harry Hofauer, Metro Toronto Zoo, Toronto, Ontario, Canada
Order/Distribution Center at AAZK Administrative Offices in Topeka

Liaison and Information Network for Keepers (LINK)

Coordinator - Mark de Denus, Assiniboine Park Zoo, Winnipeg, Manitoba, Canada



*This month's cover art features twin Pygmy goats (*Capra aegagrus hircus*) born at the Joe H. Spaulding Children's Zoo, at the Cincinnati Zoo. This species is very popular in children's and petting zoos but is also kept domestically for milk and meat by some peoples on the African continent. Twins births are not uncommon in the species. The artist for this month's cover is Natalie Mashburn who has worked as a seasonal keeper at Cincinnati since 1985 and who recently received her degree from Montana State University. Thanks, Natalie!*

Scoops and Scuttlebutt

AKF Announces Appointment of New Associate Editors

The AAZK Board of Directors is pleased to announce the appointment of Kayla Grams and Gretchen Ziegler as Associate Editors. Both are full-time keepers at Topeka Zoological Park. Kayla attended Luther College, Decorah, IA, where she received her degree in Biology. She completed a three-month internship at the Minnesota Zoo in Apple Valley before taking on her first zookeeping position at Binder Park Zoo in Battle Creek, MI. She has been a keeper at Topeka for three years working with apes, cats and elephants. She has also been involved with the local AAZK Chapter for three years (serving as Vice President and Secretary) and currently serves as President.

Gretchen has always had a great interest in zoos beginning with "Zoo School" as a child. In high school she joined the Zoo Explorer Post at the Topeka Zoo. She attended Kansas State University where she received a B.S. in Biology. Throughout college, Gretchen served as an intern at the Sunset Zoo in Manhattan, KS. Following graduation, she began a part-time job at the Topeka Zoo which became permanent, full-time within six months. Gretchen has been at Topeka Zoo for four years and is currently Lead Keeper for cats. She has been active in AAZK Chapters both in Manhattan and Topeka and served for two years as President of the Topeka Chapter. She is currently Vice President/Secretary.

The first assignment for the new Associate Editors was to analyze and write an article about the comments, suggestions, criticisms, concerns etc. expressed by respondents in the AKF survey which was sent out in March 1991. Their article appears elsewhere in this issue of AKF. Gretchen and Kala will now be assisting the editor with proofreading chores, soliciting material for several proposed columns, etc. We welcome them aboard and look forward to their input and assistance.

Research/Grants Committee Announces \$750 Award & Grant Availability

AAZK Research/Grants Committee proudly announces their award of \$750 to Judie Steenberg, Zoo Keeper at Woodland Park Zoological Gardens, Seattle, WA. Judie's project is entitled "Behavioral Aspects of Breeding Captive Matschie's Tree Kangaroos (*Dendrolagus matschiei*): Estrous Cycles of Females and Development of the Young." Congratulation, Judie!

The American Association of Zoo Keepers, Inc. announces the availability of two \$750 research grants in the field of zoo biology. Interested applicants should direct their inquiries to: Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave., SW, Atlanta, GA 30315. The deadline for submissions is 31 March 1992.

ADT Forms Available Upon Request

Animal Data Transfer Forms for zoos and aquariums are available free of charge upon request. This is a professional service provided by AAZK. Contact: Bernie Feldman, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204. If your facility is not already using the ADT form, please encourage your administration to implement its use whenever an animal is shipped.



Coming Events

12th International Elephant Workshop

October 16-19, 1991

Syracuse, NY

For further information, please contact the Elephant Workshop Steering Committee, Burnet Park Zoo, 500 Burnet Park Drive, Syracuse, NY 13204. Phone (315) 435-8511; FAX (315) 422-1224.

19th Annual Conference of the International Marine Animal Trainers Association

November 3-8, 1991

Vallejo, CA

Conference will be held at the Sheraton Hotel in Concord and will include paper sessions, poster presentations, discussion groups, SAIC/SEACO art contest, informal film and video presentations and tours at Marine World Africa USA. For further information contact: Sonny Allen, Vice President/IMATA, c/o Marine World Africa USA, Marine World Parkway, Vallejo, CA 94589.

The Ninth Dr. Scholl Conference on the Nutrition of Captive Animals

December 13-14, 1991

Chicago, IL

Co-sponsored by the Lincoln Park Zoological Society and the Chicago Park District, the conference will be held at the Lincoln Park Zoological Gardens. There will be general sessions on **Captive Animal Nutrition** and a special session on **Avian Nutrition**. For registration information, contact: Lois Stanley, Lincoln Park Zoo, 2200 N. Cannon Dr., Chicago, IL 60614, (312) 294-4666.



AAZK Announces New Professional/Contributing Members

Lyle Jensen, New England Alive (MA)
Gregory McKinney, Philadelphia Zoo (PA)
David C. Smith, NC Museum of Life/Science
Danny Walsh, Discovery Island (FL)
Deborah Jo Wooffard, Jackson Zool. Prk. (MS)
Donna Harrison, Toledo Zoo (OH)
Carolyn Jenkins, Wildlife Prairie Prk. (IL)
Diane Gould, Folsom Children's Zoo (NE)
Debra L. Arnold, Abilene Zool. Gdns. (TX)
Michelle Reddy, San Diego Zoo (CA)
Erez Gudes, Old Lady Simpsons (CA)

Catherine Meyer, Buffalo Zoo (NY)
Leonard Mattox, Sasquatch Zoo (FL)
Erin Stimson, NC Museum of Life & Science
David Cash, Discovery Island (FL)
Jacob A. Martin, Toledo Zoo (OH)
Jordan M. Sund, Toledo Zoo (OH)
James R. Ferris, Kansas City Zoo (MO)
Marina Penalver, Gladys Porter Zoo (TX)
Debra Claypool, Abilene Zool. Gdns. (TX)
Karla Turner, San Diego Zoo (CA)
Valerie Long, Happy Hollow Zoo (CA)

Joanne D'Errico, Grand Hyatt Wailea Resort (HI)
Denise Norman, Avicultural Breeding/Research Center (FL)
Jerry Hoover, Gatlinburg's Municipal Black Bear Habitat (TN)
Boyd Anderson, Exotic Feline Breeding Compound (CA)
Mark Willett, Marine World/Africa USA (CA)

Renewing Contributing Members

Tom Buchanan, Director, Abilene Zoological Gardens, Abilene, TX
Virginia Zoological Park, Norfolk, VA
ZOOCHECK Canada, Willowdale, Ontario, Canada



From the President.....

In a little over a month, the 17th National AAZK Conference will be held in Toledo, Ohio. As always, it will be a great week where zoo people from different states and different countries congregate to hear paper presentations, take part in stimulating workshops and view the host zoo from every angle. It is an opportunity to make new friends and meet old acquaintances and a good time is generally had by all.

The National Conference is also the time to direct the course of the Association via the Board and Committee meetings. Anyone who has any items they would like addressed at these meetings should send them in writing to me or to Administrative Offices in Topeka. AAZK By-laws are being revised and clarified. Please refer to the June *AKF* Vol. 18, No. 6 1991 (blue insert). If you wish to vote by proxy, all proxy votes must be postmarked no later than 15 September 1991.

The closed Board meetings will begin at 9:00 a.m. on Saturday, 5 Oct. , The closed meeting enables Board members time to discuss and clarify all AAZK projects, future direction and determine budgets and courses for many of our committees.

The open Board meeting will commence at 8:00 a.m. on Sunday, 6 Oct., and it is at this meeting, after Committee Chairs, Project Heads and any interested members have had the opportunity for input, that decisions will be made.

The Basic Rules for AAZK Open Board Meetings are as follows:

Basic Rules for AAZK Conference Open Board Meetings:

1. If a member wishes to make a statement not yet recognized by the Chair or Board, the member must raise their hand until the Chair recognizes them.

2. Once a member secures the floor, they must introduce themselves and describe their relationship to the topic in question.

3. The member then makes their statement, suggests an idea or makes a specific motion which requires either more open discussion, a vote either in favor or against brought about by the Board, or time needed to be set aside for further deliberation later in the week.

4. If a member wishes to make another comment on the same topic they received floor time for earlier, they may be allowed to address the Chair if no objections are voiced.

5. Each time a member is granted floor time by the Board for individual AAZK items, they are allowed five minutes to express their views. If additional time is needed they must request that the Board recognize them a second time to continue the discussion. This is to prevent too much time being spent on the same topics.

6. Once a member proposes an idea, 15 minutes will be allowed for open discussion. We will try to touch on every AAZK item for that length of time. Once we've passed the 15 minute time limit, the Chair must pause briefly to end all business regarding that particular item and schedule a special meeting to resolve any questions remaining.

Any topic that requires further discussion will be scheduled within the week in order to resolve all issues prior to the General Membership Meeting on Thursday, 10 October. The President will act as Presiding Officer at the Open Meeting, the Vice-President will monitor debated topics and another Board member will act as timekeeper for any items which require lengthy discussion. It is our intention to have available all committee/project reports for any interested member to read.

I look forward to seeing you in Toledo next month.

Oliver Claffey
AAZK President

From the President, *Continued*

Closed Board Meeting, Saturday 5 October 1991

Morning Session 9:00 a.m. to 12:00 noon.

Proposed Agenda:

Administrative Offices

Membership

Budgets

Finances

Wages/Benefits

Staff Proposals

All Other AO Matters

Animal Keepers' Forum

Publications - Membership Directory, Book Reviews,
Zoonotic Diseases, Diet Notebook, Biological Values, Zoo
Infant Development Project, An Approach to ZooKeeping.
Conference Proceedings: costs/format

Ad hoc Committee

AAZK Advisory Council

ESP Coordinator

Nominations & Elections Committee

AAZK LINK System

Manual of Resources

AAZK History Committee

International Affairs Committee

AAZK By-Laws



Lunch 12:00 noon to 1:00 p.m.

Afternoon Session 1:00 p.m. to 5:00 p.m.

Proposed Agenda:

Conservation, Preservation & Restoration Committee

Public Education Committee

Public Relations Liaison

AAZK/AAZPA/IZE Liaison

Awards Committee

Research/Grants Committee

Legislative Advisor

Keeper Training and Education Committee (Library Resources, Reference Search,
Keeper Training Materials)

Staff Exchange

Keeper Accommodations List (KAL)

Annual Conferences: Toledo, San Diego, Atlanta, site for 1994.

Conference Book

Zoo/University Project

Videotape Project

AAZK Forms: Animal Data Transfer Form; Exhibit Design Form

Chapter Products: Stickers/Decals, License Plates, Bumper Stickers,

T-shirts/Sweatshirts, Colder-holders, Keeper Safety Signs, Mesh Bags,

Key chain thermometers

Chapter Projects - Slide Library Project (Phoenix Chapter)

Proposals

If all Closed Board Meeting agenda items have not been covered by 5:00 p.m., the Board will reconvene at 7:00 p.m. and meet until all items have been covered.

From the President, Continued

Open Board Meeting, Sunday 6 October 1991

Morning Session will run from 8:00 a.m. until 12:00 noon

Lunch Break will be from 12:00 noon until 1:30 p.m.

Afternoon Session will be from 1:30 .m. until 5:00 p.m.

The agenda of items to be covered during the Open Board Meeting is the same as that listed for the Closed Meeting. The Board will attempt to keep to the agenda as closely as possible so that members may be in attendance when a topic of interest to them is to be discussed. An agenda will be posted outside of the meeting room and any changes in sequence will be noted on it. We hope to have copies of all committee/project reports available at a table in the meeting room for those interested members to read. Time will be set up during the week to cover any items which could not be fully resolved during the day-long Open Meeting. We will not meet Sunday evening due to the Ice Breaker.



Keeper's Alert - submitted by Jayne Davis, South American Supervisor, Caldwell Zoo, Tyler, TX

We recently discovered a serious problem with our Giant Anteater (*Myrmecophaga tridactyla*) diet. Our female started losing weight. She was eating as usual, but didn't seem to be able to swallow her food. During an examination by the veterinarian, several strings of fatty gristle were found wrapped tightly around her tongue. These strings came from the processed meat in her diet. This particular meat was removed from her diet and replaced with canned dog food. Needless to say, "Flossy" the anteater is doing fine now. Questions or comments may be addressed to: Janyne Davis, Caldwell Zoo, P.O. Box 4280, Tyler, TX 75712.

Information Please

I am looking for any type of information, data on all species of sea turtles. Especially interested in diet, water quality, medical, behavior, breeding, and any other important data. Please send information to: Michelle Kuberski, Marine Life Aquarist, West Edmonton Mall, Bsmt. 12311-104 St., Edmonton, Alberta, T5G 2L9 Canada.

Information is sought on persistent aggression between male and female Kookaburras. Especially helpful would be re-introduction techniques, both successful and unsuccessful. Please send information to: Kristin Buhl, The Phoenix Zoo, Box 52191, Phoenix, AZ 85072-2191. Any information will be greatly appreciated. Thank you.

We are interested in developing a Keeper Training Program. If you have a training program in place at this time, we would appreciate any information you could send. Also, if you know of any related videos, animal related correspondence courses, or literature we would appreciate information on these. Please contact: Kathy Trogon, North Carolina Zoological Park, Rt. 4, Box 83, Asheboro, NC 27203; FAX # 919-879-2891.



AKF Survey Results

Part II

submitted by
Gretchen Ziegler & Kayla Grams
Associate Editors AKF



As newly appointed Associate Editors of the Animal Keepers' Forum, we have been asked to provide commentary on the results of the AKF survey which was sent to the membership in the March 1991 issue. This commentary shall address the suggestions, comments and criticisms generated by the survey, and is a follow-up on the statistical analysis published in AKF last month.

The purpose of this survey was to generate some kind of consensus from the membership of AAZK about what direction it would like AKF to take in the future. The AKF is your forum, and it is the editorial staff's task to guide it towards the objectives you wish it to achieve. We were disappointed to see that only .05% of the membership responded to this survey. It is difficult to infer from so few opinions what the majority of the readers desire for their publication. It may be that many readers did not find the survey in time, as it was placed between the two conference registration forms which allowed it to be pulled out easily, but where it may have been easy to overlook. We apologize if this was the case.

Our thanks to all of you who did respond. We are pleased to discover that the majority of respondents are generally quite satisfied with the publication. Along with many positive comments, there were also many suggestions and a few criticisms which we would like to address specifically. In the following, the bold-faced portion is the comment or suggestion taken from the survey followed by our response.

1. Limit, eliminate, or change the format of Births & Hatchings - This part of AKF has received substantial criticism in the past. Years ago, stricter guidelines were established to include only those species that were threatened, endangered, or significant to an institution. In 1987 the format was changed from a simple listing of animals to a narrative approach. Comments have been made that this narration is too difficult to scan for quick information, and tends to be too lengthy - without including enough useful information. Many feel this section takes up too much space. We considered limiting B&H to only threatened and endangered species, but felt this would exclude smaller zoos that have done important work with non-endangered animals. The editorial staff shall attempt to address these concerns by screening B&H submissions more extensively, although criteria for this may be difficult to create. We encourage those who submit items for B&H in the future to consider writing an article describing all the factors involved in their accomplishments. Much more information can be disseminated through articles than is possible in B&H, and we would be delighted to receive such a wide variety of articles for publication. For now, we will try to restrict B&H. If it doesn't work out, we will discontinue this column, unless we hear of a better suggestion.

2. Spelling errors still too frequent, proofreading needs improvement - We agree that there are still more errors like this than we would like to see. A few years ago the AKF office acquired a computer to improve the editing process - which it did. But computers are not faultless; they don't catch everything. Susan proofreads everything three times before going to print, but as anyone who has tried it knows, proofreading oneself is extremely difficult. One of our duties as Associate Editors will be to assist Susan in this tedious, but important task. We hope that the extra sets of eyes will eliminate most of these frustrating errors.

AKF Survey - Part II, *Continued*

3. Include a Table of Contents - Because of the frequency of requests for this feature in AKF, plans have already been made to include a Table of Contents at the beginning of each issue no later than January, if possible. Realize that a Table of Contents can play havoc with deadlines, so please be patient!

4. Some artwork on the cover appears amateurish and detracts from a professional image - It is clear from the statistical analysis of the survey that the vast majority of respondents like the front cover drawings. Most who commented thought these drawings set AKF apart from all other publications. Many expressed appreciation at the opportunity to enjoy other talents from their fellow keepers. Some have suggested using photos on the cover. We feel these drawings represent something unique about AKF and AAZK which would be lost if we went with a more typical cover. The editorial staff will be taking a more critical look at the submitted artwork, and as we are not artists ourselves, we may ask the advice of a few of our local artists. Hopefully, we can thus raise the overall quality of our cover art to a more acceptable and professional level.

5. Begin a regular column for short blurbs of information - Many readers said they wanted to see more short "articles" about creative ideas, solutions to common problems, etc. Others said they would like to submit such items but didn't think they could get an entire article out of it. We would love to see a "Keeper Hints" column become a regular feature in AKF, but we need your help. We need a lot of input to make this successful. AKF had tried such a column before, but it soon died out when readers stopped contributing. Every keeper out there must have at least one inspired idea or helpful suggestion about their job that they can share with others. So jot it down and send it in - we'll run the column as soon as we receive enough items. Imagine the information exchange we could generate if everyone submitted just one piece!

6. Provide more conference information, but fewer registration forms - Many readers seem to desire more information about upcoming conferences than is usually given, and far enough in advance so that decisions and plans can be made as early as possible. Some suggestions included information on alternate hotel accommodations, local nature areas and other points of interest, parking, daily agendas, and paper topics. In the future we will suggest these ideas to the hosting chapter, but it is up to the chapter to provide such information to AKF. Next year we may try to reduce the number of issues that include conference registration forms from four to two issues. This should save enough space to provide another short article.

7. Establish a review committee for technical articles - Most survey respondents answered that they were in favor of such a committee. In anticipation of this need, a panel has already been tentatively created for this purpose. Pending approval from the Board of Directors, we will begin organizing the review process and committee. Since specific guidelines for this process have yet to be determined, we cannot predict if and how it may affect the rate at which technical articles become available for publication. Hopefully, the process can be streamlined to move quickly with short turnaround time, and publication delay will not be a factor.

8. Provide legislative news in advance/include SSP updates - Legislative News is a feature of AKF that seems to be fairly well-read. Some suggestions were made to provide this information prior to congressional hearings so that letters of support or dissent could be written. While this is an admirable cause, we simply do not have the resources to gather such information in advance. There are other sources available which can fill this need much better than AKF. We agree that SSP reports are of great interest to our profession. However, we are not in direct contact with the SSP Coordinators to cover this extensive topic adequately, nor do we have the space. Also, comprehensive updates are provided on a regular basis in the AAZPA *Communiqué*. We feel that AKF should contain information which may be hard to find elsewhere, instead of duplicating the efforts of other publications.

9. Print more articles in AKF, about specific husbandry topics (i.e. hoofstock, reptiles, carnivores, etc.) - AKF is limited by cost to a maximum of 40 pages per issue. The editorial

AKF Survey - Part II, Continued

staff is now attempting to trim some of the regular features (such as B&H) so that we are able to squeeze in an additional article each month. Our goal is to increase the average number of articles per issue by one. Whether this is possible remains to be seen. An overwhelming majority of survey respondents favored husbandry articles over research ones. However, most of the comments stated that a mix of both was best, and we agree. As to the subjects of the articles, we can only print what we receive from you. We cannot generate articles internally; we rely almost entirely on materials submitted by our readers. We would love to see more variety in *AKF*. If you would too, write us an article and encourage others to do the same. *AKF* is only as complete as you make it. If you feel that you have information to share, but don't feel comfortable with the writing aspect, let us know and we can help you put your material into shape for publication. Don't let the fact that you don't feel you're a 'born writer' keep you from sharing useful and important information with your colleagues.

10. *AKF* should be more professional and less anecdotal/*AKF* should 'lighten up' and include more humor - Obviously we can't please everybody. We do try to accommodate the wishes of the majority of our readers, but frankly, these two comments appeared nearly equally in the respondents' comments, with perhaps the lighter side winning just slightly. Although we strive to promote and develop professionalism within *AKF*, we feel that humor has its place too. The unique sense of humor inherent in zookeeping can be expressed occasionally without detracting from our professionalism. We all have a tendency to take ourselves and our jobs a bit too seriously at times. To prevent this, we will run a column of knock-knock jokes in next month's issue. Just kidding.....

The editorial staff would like to stress that the *Animal Keepers' Forum* is your publication. It is our job to shape *AKF* according to the wishes of the membership. That is why your input is so important. We will do our best to utilize the information from this survey to implement the changes that have been recommended. It will be awhile before we run another survey, so please don't hesitate to send in comments, suggestions, or complaints at any time. Letters to the Editor are always printed when received.

AKF was originally intended to serve as an open forum to those in the animal keeping profession. Flexible guidelines were maintained so that all members could be given an opportunity to contribute a wide variety of material. This is still the general philosophy of *AKF*. Although our membership has "grown up" considerably over the years, there remains a wide range of experience, education, and ideals among our members. We feel it is important to provide something of interest or assistance to each member, but we do not expect everything to appeal to everyone. We hope to achieve a good balance.

As stated before, we think the contents of the survey responses were quite positive. We will continue using this style and philosophy for *AKF*, incorporating these opinions and suggestions into the publication. We realize that we have not addressed every comment received, instead we chose those responses in which a number of individuals expressed an interest. Again, we want to encourage your input at any time. And thanks to all those who took the time to respond to the survey. We appreciate your effort.



In the center yellow insert you will find an explanation of the Exhibit Design Form Project and a completed sample copy of the form. After revision and refinement, the EDF Project is ready to take off again. EDF Project Coordinator Mark de Denus will be hosting a workshop during the Toledo Conference to discuss this AAZK project.



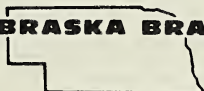
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Births & Hatchings



Kansas City Zoological Gardens... reports the following B&H for May and June of 1991:

Mammals - on 18 April we received a pregnant, wild-caught, nine-year-old Armadillo (*Dasypus novemcinctus*). On 7 May she gave birth to 0.0.2 young. One was partially eaten and the other was pulled for hand-rearing. I am happy to report that it is doing fine and growing rapidly, from 112g at birth to 837g as of 7 July. He is fed a mixture of soaked puppy chow, Esbilac® and earthworms. It has been eating on its own since 24 May.

Other mammal births include: 0.1 Guenther's dik dik (*Madoqua guentheri smithi*); 2.2 Impala (*Aepyceros melampus*); 1.2 Blesbok (*Damaliscus dorcas phillipsi*) and 0.1 Ankole (*Bos taurus*).

Birds - our Chilean flamingo (*Phoenicopterus chilensis*) has laid several eggs - one we are sure is fertile. If they hatch it will be a first for our zoo. Other hatchings include: 0.0.1 Golden pheasant (*Chrysolophus pictus*) DNS; 0.0.2 Cackling Canada goose (*Branta canadensis minima*); 0.0.2 Blue-caped cordon-bleu (*Uraeginthus cyanocephala*) DNS; 0.0.1 Lady Amherst pheasant (*Chrysolophus amherstiae*) DNS; 0.0.3 Red-crested cardinal (*Paroaria coronata*), 0.0.2 DNS. submitted by Shirley Williams, Kansas City Zoo, Kansas City, MO.

Houston Zoo... is pleased to report the following B&H for the period from January-June 1991:

A 0.1 Micronesian kingfisher (*Halycon cinnamomina*) was recently hatched in our Bird Dept. and at the request of the SSP coordinator is being hand-raised.

The Bird Dept. had many other important hatchings including 0.0.2 Mauritius pink pigeons (*Nesoenas mayeri*) which are being raised by African collared doves and 0.0.1 African pygmy falcon (*Pholophoerax semitorquatus*) which is also being hand-raised. We are one of only three institutions in the U.S. to breed Lady Ross' touraco (*Musophaga rossae*) and recently hatched 0.0.2. Other significant hatchings include: 0.0.1 Golden-headed quetzal (*Pharomachrus auriceps auriceps*), 1.0 Bare-faced birds (*Corythaixoides leucogaster*), 0.0.2 Barbary shrike (*Laniarius barbarus*), 0.0.2 Violet plantain eater (*Musophaga violacea*), 0.0.2 White-bellied-go-away birds (*Corythaixoides leucogaster*), 0.0.2 Pheasant pigeon and 0.0.1 White-crowned pigeon (*Columba leucocephala*). A first for the Houston Zoo was the hatching of 0.0.1 Greater hornbill (*Buceros bicornis*).

The Houston Zoo Bird Dept. has had great success with many Curassows (*Cracids*) and reports the following hatchings: 0.0.1 Nocturnal curassow (*Nothocrax urumutum*), 2.0 Grey's curassow, and 0.0.1 Helmeted curassow (*Crax pauxi*)

Also hatched during this period were 0.0.1 Victoria crowned pigeon (*Goura victoria*), 0.0.2 Goldie's lorikee (*Trichoglossus goldiei*), 0.0.2 Crowned plover, 0.0.2 Sun biter (*Eurypyga helias*), 0.0.2 Crowned lapwings (*Vannellus coronatus*), 2.3 NeNe geese (*Branta sandvicensis*), and 0.0.2 Plush crested jays (*Cyanocorax chrysops*).

The Reptile Dept. reports the hatching of a clutch of African spur-thighed tortoise (*Geochelone sulcata*).

Our Primate Dept. previously announced the birth of 1.0 Spectacled langur (*Presbytis obscurus*). The Primate staff had hoped that it would be parent-raised, however, the mother died shortly after the birth. A surrogate stuffed monkey was used to minimize attachment to the keeper staff who hand-raised the infant. We are pleased to announce that "Rae Chee" was recently introduced into his group and has been observed soliciting and receiving grooming.

Birth & Hatchings, Continued

Also previously reported was the birth of three African lion (*Panthera leo*) cubs. They have now been successfully introduced to the adult male and an unrelated female. Other mammal births include 1.0 Sable antelope (*Hippotragus niger*), 1.1 Nile lechwe (*Kobus leche*), 1.0 Reeves muntjac (*Muntiacus reevesi*), and 0.1 Dorcas gazelle (*Gazella dorcas*).

On one early June night some of the zoo staff were unexpectedly called back to the zoo after the discovery of 0.0.1 California sea lion (*Zalophus californianus*). This was the zoo's first birth since the exhibit was remodeled to include a birthing area for the newborn young who are unable to swim.

Our SmallMammal Dept. is pleased to report the birth of 0.0.1 Hoffman's two-toed sloth (*Choloepus hoffmanni*). They also report the birth of 0.0.2 Pygmy marmosets (*Cebuella pygmaea*), 0.1 Prehensile-tailed porcupine (*Coendou meicanis*), and 0.0.2 Vampire bats (*Desmodus rotundus*) to a colony which had been self-perpetuating for over 15 years.

In addition, the Houston Zoo is very pleased to announce the birth of 0.0.1 Spectacled bear (*Tremarctos ornatus*) on 26 January. This cub recently began entering the exhibit area with his mother and has provided both zoo visitors and news media with many photo opportunities. submitted by Colette DeGrange, Chapter Liaison, Houston Zoo AAZK Chapter, Houston, TX.

Franklin Park Zoo (Boston, MA)...reports the following B&H from Jan-July 1991:

Mammals - several species of hoofstock have been successfully reproducing. Since the unfortunate closing of Stone Zoo at the end of last year, we received numerous female Mouflon (*Ovis musimon*), which supplemented our previously bachelor herd. This resulted in the birth of a 1.0, which was our first breeding of this species in eight years.

1.1 Addax (*Addax nasomaculatus*) were born in May. These were the first animals sired by our male which was brought in from St. Louis last year. Other hoofstock births have included 0.1 Nubian ibex (*Capra ibex nubiana*), 1.0 Grevy's zebra (*Equus grevyi*), and 0.1 Dwarf forest buffalo (*Syncerus caffer nanus*).

On an unfortunate note, we lost "Old Lady" Sable antelope to old age on 11 May. She was a longtime resident, having been wild-caught as an adult in 1973. Over the years she had many offspring. Feisty until the end, her determination to survive will always be remembered.

Our Ring-tailed lemurs (*Lemur catta*) produced 0.0.2 offspring. This made seven births for this female, and as a result, we took measures to stop this species from reproducing. After the births, the decision was made to use a hormonal implant on the female. Although they make wonderful exhibit animals, they are over-represented in many zoo collections.

Birds - due to the addition of many Stone Zoo residents to the Franklin Park collection, reproduction has been repressed in the resulting overcrowded exhibits. Our Sun bittern (*Eurypyga helias*) did manage to produce 0.0.1 offspring however. Other notable hatches have included 0.0.2 African green pigeons, 1 DNS; and 0.0.1 Australian crested pigeon (*Ocyohaos lophotes*). submitted by Tom Aversa, Franklin Park Zoo, Boston, MA.

Los Angeles Zoo...we are pleased to report that June and July proved to be productive months for significant B&H.

Mammal Dept. - a Uakari (*Cacajao calvus rubicundus*), a highly endangered South American primate, is being well cared for by its mother; 0.0.1 White-cheeked gibbon (*Hylobates concolor*) born to a productive and protective mother; 1.1 Arabian oryx (*Oryx leucoryx*); 0.1 Baird's tapir (*Tapirus bairdi*); 0.1 Speke's gazelle (*Gazella spekei*); 0.1 Eastern grey kangaroo (*Macropus giganteus*); 1.1 Gerenuk (*Litocranius walleri*); 2.1 Chinese water deer (*Hydropotes inermis*); 2.7 Pronghorn (*Antilocapra americana*); and 3 Warthog (*Phacochoerus aethiopicus*).

Birth & Hatchings, Continued

Reptile Dept. - Four False coral snakes (*Erythrolamprus bizona*); 1 Prehensile-tailed skink (*Corucia zebrata*); and 9 Madagascan hognose snakes (*Leoheterodon madagascariensis*).

Bird Dept. - Three Congo peacock (*Afropavo congensis*); 3 Andean condor (*Vultur gryhus*); 12 Mandarin duck (*Aix galericulata*); 2 Greater flamingo (*Phoenicopterus ruber*); 1 Blue-winged teal (*Anas discors*); 1 Pied hornbill (*Tockus fasciatus*); 1 African pygmy falcon (*Polihierax semitorquatus*); 2 Kookaburra (*Dacelo gigas*); 1 Violet plantain eater (*Musophaga violacea*); 3 Gold-crested mynah (*Ampeliceps coronatus*); and 2 Common trumpeter swans (*Cygnus cygnus buccinator*).

Six Andean condors are being prepared for release in Columbia. Two California condors (*Gymnogyps californianus*) from the L.A./San Diego breeding project are scheduled to be released later this year. submitted by Lois Carwile, Chapter Liaison, L.A. Zoo AAZK Chapter, Los Angeles, CA.

The Baltimore Zoo...we are involved in several breeding programs, many of which involve SSP animals. Since January, all of our departments have been busy.

The **Bird Dept.** has experienced many positive results from our breeding programs. In March, our first Lappet-faced vulture (*Torgus tracheliotus*) hatched. This is believed to be the first hatching of this species in North America. The chick should fledge sometime during August and is currently fully grown. We have also hatched and are rearing two species of crane involved in SSP. The first is 0.0.1 Wattled crane (*Bugeranus carunculatus*). We rearranged our crane pairs for genetic purposes and this is the first resulting chick. It is especially important because, until now, the female was unrepresented in the captive population. The second crane chick is a 0.0.1 White-naped crane (*Grus vipio*). This bird is the direct result of artificial insemination between our resident female and an unrepresented male on loan from Hong Kong. Also, both of our Sarus crane (*Grus antigone*) pairs have 0.0.1 chicks each. Currently, 0.0.2 East African crown cranes (*Balerica regulorum*) are being hand-raised. We have also hand-reared 0.0.2 Tawny frogmouths (*Podargus strigoides*). 0.0.1 Black-footed penguin (*Spheniscus demersus*) hatched starting an early breeding season. We are still tallying the waterfowl season. However, a few of the significant hatchings include 6.10 American goldeneye (*Bucephala clangula*), 1.1 Bufflehead (*Bucephala albeola*), (1.0 DNS); 6.6.2 Common merganser (*Mergus merganser*), (0.0.2 DNS); 27.26 Hooded merganser (*Lophodytes cucullatus*), 6.12.8 North American ruddy (*Oxyura jamaicensis*), and 0.5 Smew (*Mergus albellus*).

The **Herptile Dept.** has some exciting news. 0.0.12 African mud turtles (*Pelusios subniger*) have hatched from a female that has been in our collection since 1950. Her age at arrival is unknown. Of the twelve, only one did not survive. We have also hatched 0.0.6 Red-tailed green rat snake (*Gonyosoma oxycephala*), 2 DNS.

The **Mammal Dept.** has raised 1.0 King Island wallabies (*Macropus rufogriseus*), 0.1 Llama (*Lama glama*), 0.0.2 Red-handed tamarins (*Saguinus midas*), 1.1.1 African ground squirrel (*Xerus erythropus*), 1.1 Rope squirrel (*Funisciurus*), and 0.1.1 African hedgehog (*Atelerix albiventris*). But the most significant is the direct result of a captive breeding program for the Allegheny woodrat (*Neotoma floridana magister*). This program is being conducted in cooperation with the states of Maryland and New York. On 16 July, 0.0.2 woodrats were born and are being mother-raised. submitted by Susan Scott, Chapter Liaison, Greater Baltimore Area AAZK Chapter.

Columbus Zoo...reports the following B&H:

Reptiles - 0.0.3 New Guinea/Australian snake-necked turtle (*Chelodina siebenrocki*) believed to be the first born in a U.S. zoo; 0.0.1 Painted batagur (*Callagur borneoensis*), first captive breeding in U.S.

(B&H continued on page 299)

The Exhibit Design Form Project

By
Mark de Denus, Project Chair
Assiniboine Park Zoo, Winnipeg, Manitoba, Canada

PURPOSE AND OBJECTIVES

(Please Read Carefully)

Firstly, the initial purpose of the Exhibit Design Form Project is to survey and document existing captive animal exhibits at zoological institutions.

Secondly, (using the collected data), a general Resource Notebook will be created to facilitate the creation and improvement of animal exhibits. The notebook will provide general design and maintenance information for specific animal species and can be used to compliment a comprehensive research package. This information, with additional and adequate research, may be utilized in exhibit design for existing or proposed exhibits through modification, variation or, if appropriate, duplication of this information.

HISTORY

This long-awaited project was originally conceived by Diane Forsyth of Akron Zoo. Under the

PHASING

In order to accommodate the vast wealth of information regarding exhibit designs and descriptions that will ultimately be recorded on the EDF, the project will be phased.

The first phase will be MAMMALS.

Part of the original intention of EDF was to access keeper input in the design process; therefore, keepers will be approached directly. Zookeepers work with exhibits everyday and should be the most appropriate source of information for, and evaluation of an exhibit. To assist with this project, the LINK network will be used to assist and facilitate the distribution of forms. For now, active AAZK Chapters will be targeted and sent EDFs for completion. For Chapters and interested individuals, EDFs will be available in the very near future upon request from Regional Coordinators.

NOTE: All completed Exhibit Design Forms must

SPECIFICS OF EXHIBIT COMPONENTS

Describe in the most appropriate manner using one or more indicators. Give short, concise and specific comments in spaces provided.

DESCRIBE ONE OF THE FOLLOWING COMPONENTS:

☐ indoor exhibit ☒ outdoor exhibit ☒ shift/off-exhibit area

(Photocopy additional blank sheets of this page in order to complete other exhibit components)

DIMENSION:	length	8	ft.	2.2	meters
	width	4	ft.	1.4	meters
	height	8	ft.	2.2	meters
	circumference	—	ft.	—	meters
	area	32	sq. ft.	3.1	sq. me
	other	—		—	

EXHIBIT FLOOR/ SUBSTRATE MATERIAL:

<input type="checkbox"/> soil	<input type="checkbox"/> sand	<input type="checkbox"/> clay	<input type="checkbox"/> rock	<input type="checkbox"/> grass
<input checked="" type="checkbox"/> concrete	<input type="checkbox"/> gunnite	<input type="checkbox"/> stone	<input type="checkbox"/> gravel	<input type="checkbox"/> wood
<input type="checkbox"/> shavings	<input type="checkbox"/> woodchips	<input type="checkbox"/> woodbark	<input type="checkbox"/> Other _____	

Comment

EXHIBIT BARRIERS (perimeter):

☐ dry moat ☐ wet moat ☐ stream ☐ lake ☐ wire fence

Photocopy additional blank sheets of this page in order to complete other exhibit components.

ANIMAL NEEDS

NATURAL VISUAL BARRIERS
(hills, mounds, trees, bush)

☐ yes

☒ no

FURNISHED VISUAL BARRIERS
(walls, fence, etc.)

☐ yes

☒ no

FLIGHT DISTANCE

☐ good

☒ moderate

☐ poor

ACCESS TO PRIVACY

OR SOLITUDE

☐ good

☒ moderate

☐ poor

SAFETY

Degree of public access to animals

☐ high

☐ moderate

☐ low

☒ none

Degree of animal access to keepers

☐ high

☐ moderate

☒ low

☐ none

USE OF SPECIFIC EXHIBIT AREAS:

Designated feeding areas

☐ good

☐ moderate

☐ poor

☒ n/a

Designated resting areas

☒ good

☐ moderate

☐ poor

☐ n/a

Designated nesting or isolation areas

☐ good

☐ moderate

☐ poor

☒ n/a

WATER FACILITIES (Ponds, pools)

☐ good

☐ moderate

☐ poor

☒ n/a

Length _____

Width _____

Depth (max.) _____

(min.) _____

Gals. _____

Circulation _____

Filtration _____

DRINKERS:

☒ good

☐ moderate

☐ poor

☐ n/a

No. of drinkers _____

Type of drinkers _____

PRESSURE RELEASE WALL SPIGOT

GENERAL APPRAISAL OF ENVIRONMENT:

☐ stimulating

☒ basic/functional

☒ sterile

Comment _____

GENERAL & UNCOMPLICATED LAYOUT - COULD USE

MORE DIVERSITY (ENVIRONMENT ENRICHMENT)

SPECIFICS OF EXHIBIT COMPONENTS

Describe in the most appropriate manner using one or more indicators. Give short, concise and specific comments in spaces provided.

DESCRIBE ONE OF THE FOLLOWING COMPONENTS:

☒ indoor exhibit ☐ outdoor exhibit ☐ shift/off-exhibit area
(Photocopy additional blank sheets of this page in order to complete other exhibit components)

DIMENSION: length 15 ft. 4.5 meters
width 12 ft. 3.7 meters
height 10 ft. 3.1 meters
circumference - ft. - meters
area 180 sq. ft. 16.7 sq. meters
other _____

EXHIBIT FLOOR/SUBSTRATE MATERIAL:

☐ soil ☐ sand ☐ clay ☐ rock ☐ grass
☒ concrete ☐ gunnite ☐ stone ☐ gravel ☐ wood
☐ shavings ☐ woodchips ☐ woodbark ☒ Other ALFALFA

Comment ALFALFA & OTHER BROWSE USED DURING WINTER MONTHS

EXHIBIT BARRIERS (perimeter):

Photocopy additional blank sheets of this page in order to complete other exhibit components.

ANIMAL NEEDS

NATURAL VISUAL BARRIERS ☐ yes ☒ no
(hills, mounds, trees, bush)

FURNISHED VISUAL BARRIERS ☐ yes ☒ no
(walls, fence, etc.)

FLIGHT DISTANCE ☒ good ☐ moderate ☐ poor

ACCESS TO PRIVACY

OR SOLITUDE ☐ good ☒ moderate ☐ poor

SAFETY

Degree of public access to animals ☐ high ☐ moderate ☒ low ☐ none

Degree of animal access to keepers ☐ high ☐ moderate ☐ low ☒ none

USE OF SPECIFIC EXHIBIT AREAS:

Designated feeding areas ☒ good ☐ moderate ☐ poor ☐ n/a

Designated resting areas ☐ good ☐ moderate ☐ poor ☒ n/a

Designated nesting or isolation areas ☐ good ☐ moderate ☐ poor ☒ n/a

WATER FACILITIES (Ponds, pools) ☐ good ☐ moderate ☐ poor ☒ n/a

Length _____ Width _____ Depth (max.) _____ (min.) _____

Gals. _____ Circulation _____ Filtration _____

DRINKERS: ☒ good ☐ moderate ☐ poor ☐ n/a

No. of drinkers 1 Type of drinkers PRESSURE RELEASE WALL SPIGOT

GENERAL APPRAISAL OF ENVIRONMENT: ☒ stimulating ☐ basic/functional ☐ sterile

Comment CLIMATE STRUCTURE ALWAYS VARIED AND

3-DIMENSIONAL USE OF EXHIBIT.

SPECIFICS OF EXHIBIT COMPONENTS

Describe in the most appropriate manner using one or more indicators. Give short, concise and specific comments in spaces provided.

DESCRIBE ONE OF THE FOLLOWING COMPONENTS:

☐ indoor exhibit ☒ outdoor exhibit ☐ shift/off-exhibit area

(Photocopy additional blank sheets of this page in order to complete other exhibit components)

DIMENSION: length 36 ft. 10.9 meters

width	ft.	meters
15		4.5

height 14 ft. 4.0 meters

circumference _____ ft. _____ meters

area 540 sq. ft. 49 sq. meters

other

EXHIBIT FLOOR/SUBSTRATE MATERIAL:

<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> sand	<input type="checkbox"/> clay	<input type="checkbox"/> rock	<input checked="" type="checkbox"/> grass
<input type="checkbox"/> concrete	<input type="checkbox"/> gunnite	<input type="checkbox"/> stone	<input type="checkbox"/> gravel	<input type="checkbox"/> wood
<input type="checkbox"/> shavings	<input type="checkbox"/> woodchips	<input type="checkbox"/> woodbark	<input type="checkbox"/> Other	

Comment MOSTLY GRASS WITH SMALL SAND OR SOIL ZONES.

EXHIBIT BARRIERS (perimeter):

☒ dry moat ☐ wet moat ☐ stream ☐ lake ☒ wire fence

Provide a generalized drawing of the exhibit using the sample as a guide. Include pools, barriers and other features where possible.

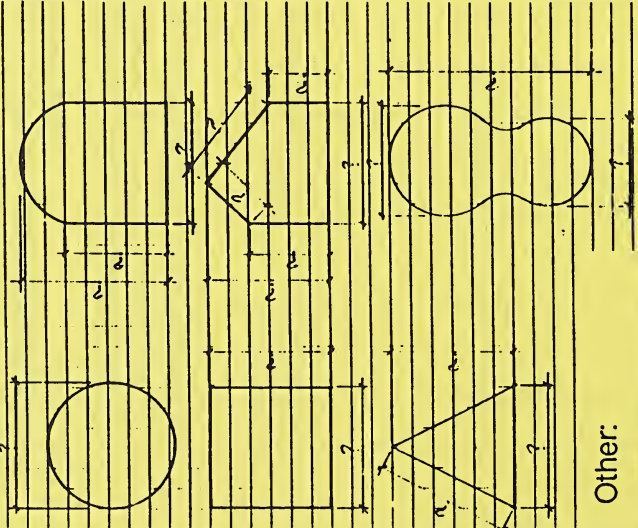


72
24

60
20

48
16

ENCLOSURE TYPES



Other:

dry moat

5. 2005

Instructions:

Choose an enclosure type and include a generalized drawing with dimensions in the space provided below.

SCIENTIFIC NAME Macaca silenus

COMMON NAME LION-TAILED MACAQUE

CONTRIBUTOR (name and title) MARK de DEUVS - ZOOKEEPER II

INSTITUTION ASSUMPTION PARK ZOO / 2355 CORDON AVE, WINNIPEG, MANITOBA
CANADA R3P 0R5

DESIGNER/ARCHITECT ☐ in-house ☒ contracted/professional firm

other _____

YEAR OF EXHIBIT CONSTRUCTION 1972 RENOVATION (minor) 1989, 1990

LOCAL WEATHER CONDITIONS (C°): extremes 30° to -30°C

GENERAL INFORMATION

COMPONENTS OF EXHIBIT: ☒ indoor exhibit

☒ outdoor exhibit

☒ shift/off-exhibit area

LOCATION ☐ singular exhibit

☒ part of multi-exhibit complex/building

ANIMAL SPECIFICS 3 total number of males

4 total number of females

- total number of 'sex unknown'

AMERICAN ASSOCIATION OF ZOO KEEPERS INC.

EXHIBIT DESIGN FORM

(Single Species Exhibits)

PURPOSE

To survey and document existing captive animal exhibits at zoological institutions.

OBJECTIVES

To create a general resource to facilitate the creation and improvement of animal exhibits. The form will provide general design and maintenance information for specific animal species and can be used to complement a comprehensive research package. This information, with additional and adequate research, may be utilized in exhibit design for existing or proposed exhibits through modification, variation or, if appropriate, duplication of this information.

RELEASE NOTATION

Please note that this information is provided solely as a reference work to be used in conjunction with other information sources when creating a new exhibit. This form does not contain adequate details for construction of an exhibit and does not take into consideration the climate, terrain and other particular circumstances present at your site.

By consideration or use of the information included herein you specifically release and discharge A.A.Z.K. and the designer/creator of this design from any liability for misinformation, errors or omissions. It is acknowledged that the exhibit incorporating any part of this design will be constructed with such professional and technical

creator/designer is entitled considering the use made of the information provided.

All information submitted is intended for publication.

I have complied with the guidelines of my institution regarding publications and have received all necessary approval.

Mark de Deus

Contributor's signature

ZOO KEEPER II (TROPICAL HOUSE)

Title/Position

[Signature]

Director's signature

JULY 18, 1991

Date

Printed name

MARK DE DEUS



AMERICAN ASSOCIATION OF ZOO KEEPERS INC.

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All information submitted is intended for publication.

I have complied with the guidelines of my institution regarding publications and have received all necessary approval.

Mark De Denus

Contributor's signature

ZOO KEEPER II (TROPICAL HOUSE)

Title/Position

[Signature]

Director's signature

JULY 18, 1991

Date

MARK DE DENUS

Printed name



females

1766

1776

1781

1781

sex unknown

HAS THIS SPECIES BREED SUCCESSFULLY IN THIS EXHIBIT? ☒ yes ☐ no

GENERAL EXHIBIT DYNAMICS:

SPATIAL CONSIDERATIONS ☒ good ☒ moderate ☐ poor ☐ n/a

OPTIMUM NUMBER OF ANIMALS TO BE EXHIBITED ☒ male ☒ female ☒ young

NATURAL DRAINAGE ☒ good ☐ moderate ☐ poor ☐ n/a

SHELTER (wind/rain) ☒ good ☐ moderate ☐ poor ☐ n/a

Comment OUTSIDE EXHIBIT IS SPACIOUS; INSIDE SPACE DEPENDS ON GROUP DENSITY

PUBLIC VIEW: Does the exhibit provide:

1. a realistic, naturalistic view ☐ yes ☒ to a degree ☐ none

2. an interpretive/educational view ☐ yes ☒ to a degree ☐ none

3. visual access to the animals ☒ good ☐ moderate ☐ poor

WHAT MIGHT BE THE GENERAL PUBLIC ATTITUDE/PERSPECTIVE TOWARDS THE EXHIBIT:

☐ favourable ☐ indifferent ☐ unfavourable ☒ unknown

Comment PUBLIC MAY PERCEIVE SOCIAL/BEHAVIOURAL INTERACTIONS OF MONKEYS; MAY VIEW OUTDOOR EXHIBIT FAVOURABLY; MAY VIEW GENERAL STERILITY OF INDOOR EXHIBIT UNFAVOURABLY.

PUBLIC
VIEWING
→

15'

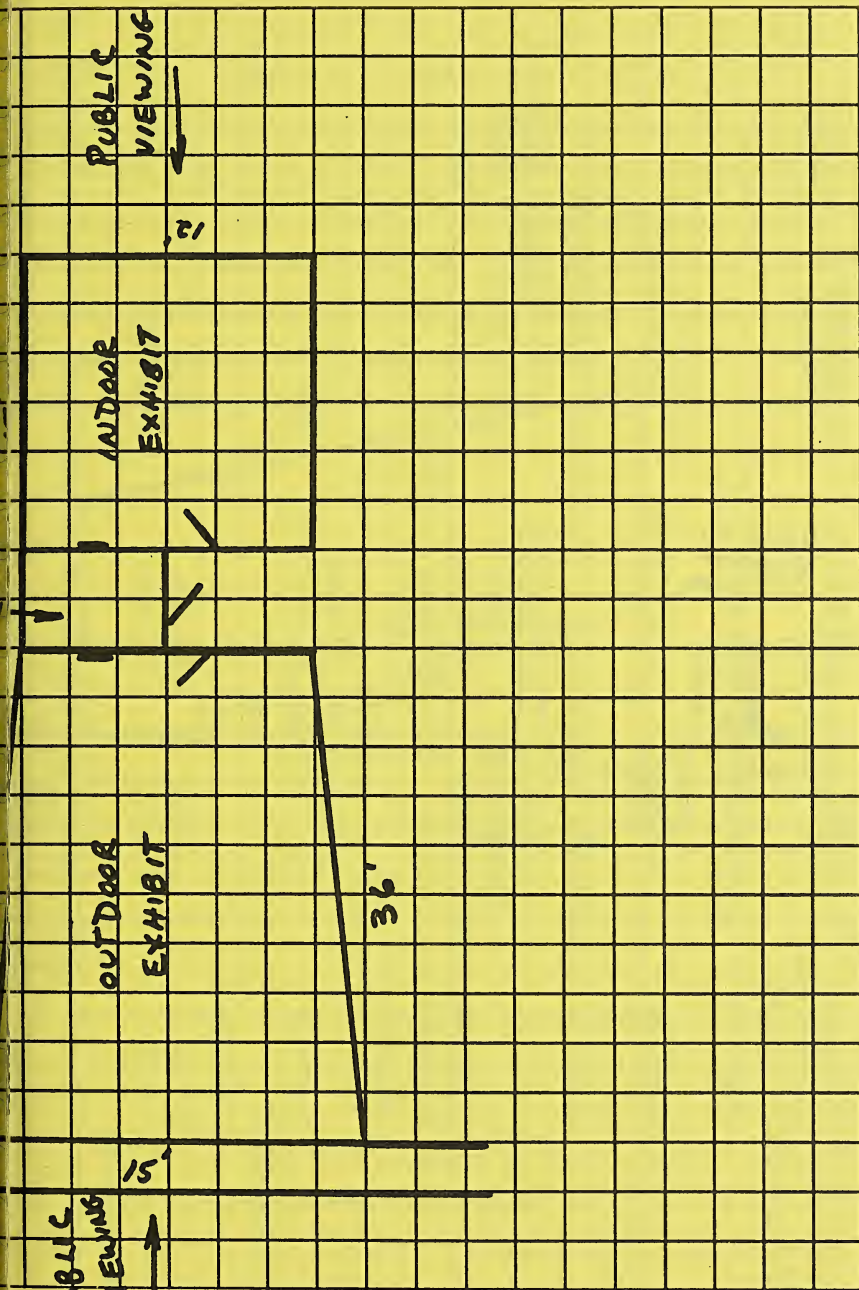
OUTDOOR
EXHIBIT

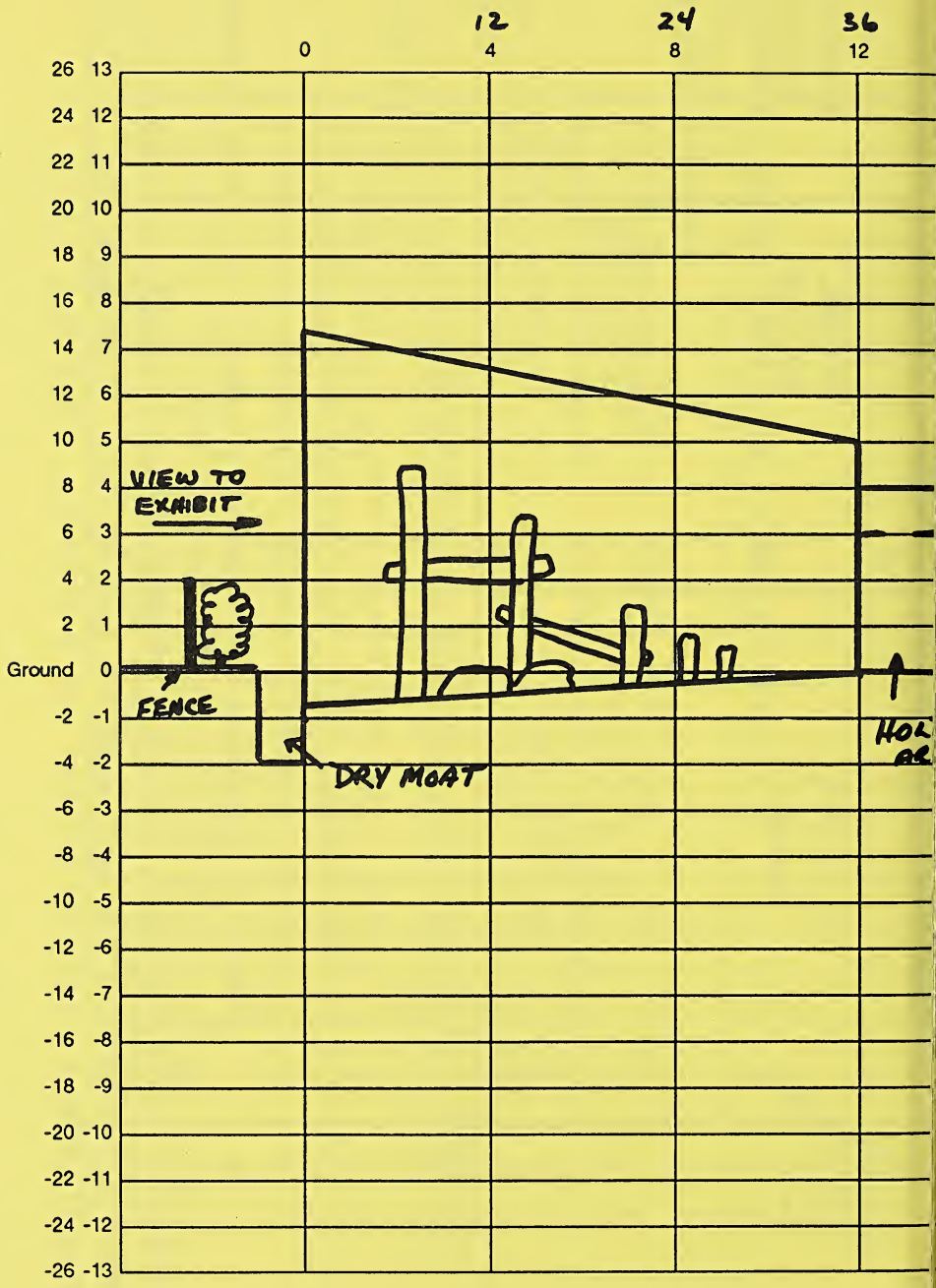
36'

INDOOR
EXHIBIT

PUBLIC
VIEWING
←

12'





☐ Other _____
Comment DRY MOAT BETWEEN VISITOR AREA & WIRE PERIMETER FENCE

EXHIBIT ROOFING:

- ☐ open
☒ wire
☐ wood
☐ netting
☐ metal
☐ glass
☐ iron bars
☐ fiberglass
☐ Other _____

Comment _____

EXHIBIT FEATURES:

NATURAL

- ☐ live trees
☐ waterfall
☐ live plants
☐ stream
☒ rocks
☐ Other _____

Comment _____

FURNISHED/
ARTIFICIAL

- ☐ logs
☐ swings
☒ poles
☐ waterfall
☐ dead trees/stumps
☐ ropes
☐ pond
☐ stream
☐ shelves
☐ nest box
☐ Other RUBBER ROSES
☐ bars
☐ cave

Comment CLIMBING STRUCTURE OF POLES (WOODEN)

LIGHTING:

- ☒ natural
☐ fluorescent
☐ ultraviolet
☐ incandescent
☐ Other _____

Comment SUMMER EXHIBIT

HUMIDITY/HEATING CONTROL:

- ☐ forced air
☐ oil
☐ supplemental heaters
☐ hot water radiant
☐ solar
☒ none
☐ electric
☐ heat lamps
☐ Other _____
☐ gas

Comment _____

Efficient/effective cleaning
Animal shifting method
Animal control gates/doors

number of drains _____ size _____
☐ good ☒ moderate ☐ poor
☒ good ☐ moderate ☐ poor ☐ none
☒ slide ☐ hydraulic ☐ electric ☐ pneumatic
other _____

Animal capture method
Keeper access to exhibit

☐ good ☒ moderate ☐ poor
☒ good ☐ moderate ☐ poor
☒ good ☐ moderate ☐ poor

Access to exhibit for maintenance
(electrical, water, heating, etc.)

Access for renovation/redesign

Rate of deterioration of exhibit

Rate of deterioration of features

Keeper/animal interaction

☒ good ☐ moderate ☐ poor
☒ high ☒ moderate ☐ low
☒ high ☒ moderate ☐ low
☒ safe ☐ tolerable ☐ unacceptable
☐ avoidable ☐ unavoidable ☐ none

Usual or best capture technique

☒ net ☐ squeeze cage ☐ gloves/hands
☐ rope ☐ capture pole other CAPTURED INSIDE EXHIBIT

Comment GENERALLY GOOD EXHIBIT, NEEDS SOME ENVIRONMENT
ENRICHMENT ATTENTION.

DEGREE OF MAINTENANCE EFFORT
General cleaning

☒ daily ☐ weekly ☐ monthly other _____
☐ sweep ☒ rake ☐ scrub ☐ disinfect
☒ less than 30 min. ☐ less than 1 hour

Special duties

☐ more than 1 hour
☐ pond ☐ moat
☒ substrate change
☒ grass cutting

Comment MACAQUES ARE FAIRLY DESTRUCTIVE

(GRASS, WOOD)

EXHIBIT ROOFING:

☐ open ☐ wire

☐ wood

☐ netting

☐ metal ☐ glass

☐ iron bars
☒ Other **C**☐ fiberglass

☒ Other CONCRETE FINISH

EXHIBIT FEATURES:

NATURAL

☐ live trees

☐ waterfall

- ☐ live plants
- ☐ stream

☐ rocks

☐ Other

FURNISHED/
ARTIFICIAL

☐ logs
☐ swings
☒ poles
☐ waterfall

☐ dead trees/stumps ☒ ropes ☐ pond ☐ stream

☐ bars
☐ cave

LIGHTING:

☐ natural

X fluorescent

☐ ultraviolet

☐ incandescent
☐ Other

HUMIDITY/HEATING CONTROL:

☒ forced air

☒ hot water radiant ☐ none
☐ solar ☐

☐ electric
☒ heat lamps
☐ Other

☐ gas

heat lamns

☐ Other

Comment

4 FLUORESCENT LIGHTS (WINTER EXHIBIT)

Floor drains

☒ good ☐ moderate ☐ poor ☐ none
number of drains 1 size 4"

Efficient/effective cleaning

Animal shifting method

Animal control gates/doors

☒ good ☐ moderate ☐ poor ☐ none
☒ good ☐ moderate ☐ poor ☐ none
☒ slide ☐ hydraulic ☐ electric ☐ pneumatic
other _____

Animal capture method

Keeper access to exhibit

Access to exhibit for maintenance

(electrical, water, heating, etc.)

Access for renovation/redesign

Rate of deterioration of exhibit

Rate of deterioration of features

Keeper/animal interaction

Usual or best capture technique

☐ good ☒ moderate ☐ poor ☐ poor
☒ good ☐ moderate ☐ poor ☐ poor
☒ good ☐ moderate ☐ poor ☐ poor
☒ good ☐ moderate ☐ poor ☐ poor
☐ high ☐ moderate ☒ low
☒ safe ☐ tolerable ☐ unacceptable
☐ avoidable ☐ unavoidable ☐ none
☒ net ☐ squeeze cage ☐ gloves/hands
☐ rope ☐ capture pole other THROWED GUN FOR

Comment EASILY MAINTAINABLE ? MAINTENANCE

DEGREE OF MAINTENANCE EFFORT

General cleaning

☒ daily ☐ weekly ☐ monthly other _____
☒ sweep ☐ rake ☒ scrub ☒ disinfect
☒ less than 30 min. ☐ less than 1 hour
☐ more than 1 hour
☐ pond ☐ moat ☐ grass cutting
☐ substrate change

Special duties

Comment _____

Comment _____

EXHIBIT ROOFING:

- ☐ open
☐ wire

- ☐ wood
☐ netting

- ☐ metal
☐ glass

- ☐ iron bars
☐ Other CONCRETE FINISH
☐ fiberglass

Comment _____

EXHIBIT FEATURES:

NATURAL

- ☐ live trees
☐ waterfall

- ☐ live plants
☐ stream

- ☐ rocks
☐ Other _____

Comment _____

FURNISHED/
ARTIFICIAL

- ☐ logs
☐ swings
☐ poles
☐ waterfall

- ☐ dead trees/stumps
☐ ropes
☐ pond
☐ stream

- ☒ shelves
☐ nest box
☐ Other _____
☐ bars
☐ cave

Comment _____

TEMPORARY HOLDING AREA ONLY (DURING CLEANING)

LIGHTING:

☐ natural

☐ fluorescent

☐ ultraviolet

- ☒ incandescent
☐ Other _____

Comment _____

HUMIDITY/HEATING CONTROL:

- ☐ forced air
☐ oil
☐ supplemental heaters

- ☒ hot water radiant
☐ solar

☐ none

- ☐ electric
☒ heat lamps
☐ Other _____
☐ gas

Comment _____

a service form (similar to the intention of the Animal Data Transfer Form of AAZK) for keepers and other staff to use on a request basis. Personnel could request information on particular species by direct contact with institutions having these animals and exhibits. A copy of the completed EDF would be sent to the requesting zoo, a copy would be kept by the contributing zoo, and a third copy would be sent to EDF project committee head for compilation.

A number of EDFs were distributed through various means and some information was collected. On taking over the project in 1988, I proceeded to evaluate the form and its potential. I completed a review of the EDF Project and submitted some major changes to the scope and strategy of the project as well as made some major changes in the actual Exhibit Design Form itself.

SCOPE AND STRATEGY

After reviewing all the available material on the EDF project, I suggested a change in scope and strategy for the project to the AAZK Board of Directors. Among the major concerns for the viability of this undertaking were the legal questions, requirements and protection for the Form (information release, publication permission, copyright, etc.), useable and consistent data information (standardizing and simplifying the EDF itself) and distribution and collection of completed forms for compilation. To date, all these aspects have been addressed and the project is ready to proceed.

Because of the nature of the project, only a limited number of EDFs will be printed. Therefore, availability of the form will be limited for now. I hope for a substantial return of completed forms from targeted Chapters before the National Conference next month. A further evaluation of the form and, perhaps, some necessary and useful revisions may be warranted at that time before a major printing of the EDF is appropriate.

SUMMARY

The intention of this project is to provide a reference work to be used in conjunction with other information sources for new or future exhibit concept planning, or for appropriate modification or renovation of existing exhibit structures.

Release and publication notation must be read and signed by the contributing institution's director/senior administrator.

It is encouraged that zookeepers and other animal care staff be the contributor of the information for each exhibit in order to give the most realistic and objective description and appraisal of the exhibit.

This pilot survey is for single species exhibits of mammals only.

A completed copy of the EXHIBIT DESIGN FORM is included herein for your perusal.

Conference '91



We have come to expect conference programs that reflect traditional zookeeping issues, concerns and needs. In keeping with our theme "An open forum for the future", the Toledo Conference will also offer opportunities to expand and debate the challenges facing our evolving profession.

Toledo Conference '91 Tentative Schedule

Sunday, 6 October

- Open Board Meeting
- Ice Breaker

Tuesday, 8 October

- Paper Sessions at the Zoo
- Zoo Tours
- ZOOlympics
- Workshops
- Silent Auction

Thursday, 10 October

- Paper Sessions
- General Membership Meeting

Monday, 7 October

- Breakfast
- Professional Perceptions, the many aspects of zookeeping
- Awards Lunch
- Workshops

Wednesday, 9 October

- Animal Rights Forum, an ethical challenge for zookeepers
- Australasian Rap Session
- Pool Party

Friday, 11 October

- Conservation Forum, realizing our conservation potential
- Workshops
- Banquet

BULLETIN: The Toledo Conference Committee is pleased to announce that they have received confirmation that Esmond Bradley Martin, the world's leading authority on the Black Rhino and author of "Run Rhino Run", will be the special keynote speaker on Friday, 11 October during the Conservation Day schedule.

Following is a partial list of presentations:

Keeper Initiatives in Exhibit Design
Behavioral Enrichment for Primates
The Pygmy Slow Loris in Captivity
The Manatee and Aquatic Center at the Lowry Park Zoo
Hand-raising Maned Wolves at the Louisville Zoo
Project Puffin, a zoo keeper's role
Treating Periodontal Disease in the Lesser Bushbaby

Sex and the Single Drill
Ecosystem Survival Plan
Bowling for Rhinos
Zookeeper Outreach Program
Ngare Sergoi and
Ngare Ndare Update
and much more!

Facilities are available for special interest groups and informal workshops. Please let us know your requirements. Volunteers are needed to monitor sessions. Please contact Bill McDowell, Toledo Zoo, (419) 385-5721.

We are happy to announce that the Boomer Ball Company will be exhibiting at the Conference. They will be offering special conference prices on their merchandise, so you might consider bringing purchase orders.

Final Call for All Animal Imitators

As part of our Zoolympics at the Toledo Conference, brave individuals will get a chance to go public with their creations during the "Animal Imitation Contest". These will include vocalizations and body gestures. The categories will be: birds, mammals, reptiles/amphibians, fish and insects. Contestants will be judged on their ability to mimic the animal they have chosen. (Entrants must choose one category only.) Prizes will be awarded to one winner from each category.

Please fill out the form below if you are planning to participate.

Animal Imitations Contest

Name _____

Address _____

Telephone () _____

Organization _____

Category (please specify the species of animal you will be imitating)

Birds _____

Mammals _____

Reptiles/Amphibians _____

Fish _____

Insects _____

Please return this form to: Toledo Chapter AAZK/Entertainment
Committee, P.O. Box 4010, Toledo, OH 43609.

Entries must be postmarked no later than 30 September 1991.



Hozer Bash in Columbus Draws Ever Closer!

What more can we say? In past issues of the Forum, we have told you about our upcoming Pre-Conference Event the weekend before Toledo's National Conference. We have also told how those frivolous frogs Hozer and Elvis have been having too much fun in Columbus, and how two of you are needed to escort them to Toledo to ensure their attendance at the National Conference. October 4th and 5th promises to be full of education, fun and excitement in Ohio's Capital City.

Well, folks, this is the last time you will be subjected to rantings and ravings about this event because October is almost here! We just want to lay a few last tidbits of info on you that you may find of interest.

--Please feel free to attend even if you don't register; it looks like we will have plenty of space to put people up for free; just call or write us so we can make arrangements. (Also, a lot of the food and drinks will be provided free of charge).

--If you are flying in, we can pick you up at the airport. Also, we can get you to Toledo and back if that proves necessary. Just let us know what arrangements you will need.

--Hozer and Elvis are REALLY looking forward to the party in their honor, and hope you all can join them. These audacious amphibians have been the source of much pleasure and laughter at past conferences, so let's all turn out and give them their due respect!

Well, that's it! The Columbus Chapter of AAZK hopes to see all of you the first weekend in October.

1991 Columbus Pre-Conference Registration

Name _____

Address _____

Telephone () _____ Organization _____

Vegetarian YES ____ NO ____ Please specify type _____

Arrival date and time _____

Please return to:

Carl Gyarmaty
Columbus Zoo AAZK
P.O. Box 1256, Powell, OH 43065.
Phone: Work (614) 645-3412; Home (614) 263-7048



"Take One--Please..."

Using a Visitor Survey for an Informal Browse Study

By
*Tamara S. Ryf, Assistant Lead Keeper
Dreher Park Zoo, West Palm Beach, FL*

Being a primate keeper, I am always looking for different approaches to enhance the environment of the animals as well as enhancing the visitor's experience at our zoo. Since Dreher Park Zoo is set in a lush botanical area, there are many tropical plants on hand to use for browse. The browse is a great natural way to stimulate the animals. I have found that when browse is added to the captive primate's environment, it encourages activity both physical and mental. I was curious to see if while I was enhancing the animal's environment, the visitor also benefited from the experience.

To achieve this task, I had to make a few decisions. First, how was I going to contact the average zoo visitor? Being a keeper at a small zoo, time was very limited so in-depth visitor observations seemed impractical. Second, what primate should be used in this informal study? We have a diverse collection of small primates which includes tamarins, cebids and guenons. Third, how was I going to present the browse in a conspicuous manner so that the visitor would better understand my motive? Most of our primates are housed on landscaped islands or heavily planted outdoor exhibits so the browse would blend in with the surroundings.

Since it was mainly the visitor's point of view that was needed, I decided to compile a short informal survey for them to complete. The survey included an explanation of the experiment and a series of short, easy to answer questions. The survey was placed on a clipboard and attached to a stand near the exhibit. Pencils were provided to encourage more visitors to fill out the form. The survey was made available from June 1990 to September 1990. This period is considered our slow season, but it allowed visitors more time at the exhibit due to the lack of large groups of school children. By using the survey, I was able to gather information without spending a great deal of time making observations. The only things I had to do daily were to make available plenty of surveys, sharpen the pencils and collect the completed surveys.

I decided to use only one group of primates in our collection for this experiment. Dreher Park Zoo's Diana monkeys (*Cercopithecus diana*) seemed to be the logical choice. This group was comprised of an adult pair (1.1) which are housed in a double bailing wire exhibit. The exhibit consists of two bailing wire cages connected by a cement shift area. One side has a covered roof with a cement floor and large prop branches. The other side has an open chain-link roof with a earth bottom floor and a telephone pole and rope "jungle-gym" structure. This side serves as a "play area". The exhibit is surrounded by trees and hedges, but no greenery is present inside of the enclosure.

Another plus was that this pair had not yet produced an offspring. All other primate groups consisted of individuals of varying ages and there was always constant activity or a newborn baby to attract the visitor. With the choice of the Diana monkeys, I had solved the variables of what animals should take part in the study and how to present the browse in a way that would be obvious to the visitor.

The zoo is set in a heavily planted park with a wide variety of tropical browse from which to choose. Some of the species of plants available to the keepers are: ficus, powder puff, banana, bamboo, bougainvillea, hibiscus, and cercropia. The browse is offered on an every other day schedule or whenever available. It was decided to place the browse in the earth bottom half of the exhibit for two reasons. One, the browse fit snugly into the gaps between the telephone poles thus eliminating the need to build browse holders. Two, this side of the exhibit is entered daily for cleaning, so time was saved in both presenting the browse and removing the old material. With all the preceding variables solved, it was time to put the plan in motion. This was when I discovered which choices were successful and which ones were not.

"Take One--Please..." *Continued*

The survey worked out well---actually too well. I collected 200 completed surveys during the project. Since this time of year is the rainy season, some surveys fell victim to afternoon thunderstorms. Even though only pertinent questions were asked, I ended up collecting more data than was necessary. Because of this, it took quite a bit longer than expected to reach my conclusions.

Just before I put the finishing touches on the survey, our Diana monkeys presented us with our first-ever newborn of this species at Dreher Park Zoo. Since the plans had already been made and more people were now involved in this project than myself, I decided to go ahead and use the animals on the basis of their exhibit.

The majority of the visitors responded on the survey that although the browse was attractive and kept the monkeys active, it was mainly the newborn that drew them to the exhibit. This backed-up my earlier thought that if a young baby was present in the exhibit, the visitor would not have been attracted to seeing the animals manipulating browse.

The browse being offered every other day allowed me to see when the visitor spent more time viewing the monkeys. I found out the average visitor spent between 5-10 minutes watching the animals. This was true whether browse was available or not. Although the visitor spent the same amount of time viewing the animals, they did comment on how the animals used the browse offered. They responded on how the animals approached the browse, what parts they ate, and which individuals used the browse. Due to this fact, I decided that the visitor does benefit from observing the animals using the browse.

In conclusion, I would just like to share the perspective gained from undertaking this informal study. The survey helped me to see more clearly how a visitor views the animal on exhibit and the exhibit itself. This is a great help when I add new props and even in day-to-day exhibit maintenance. Also, I believe the survey acted as an icebreaker between the zoo visitor and myself. It encouraged the visitor to ask more questions not only about the primates but about the zoo as a whole. Many visitors did comment on how they wished there were more similar projects throughout the zoo in which they could directly participate. This way they are not just another visitor, but actually contributing to an on-going project at the zoo.

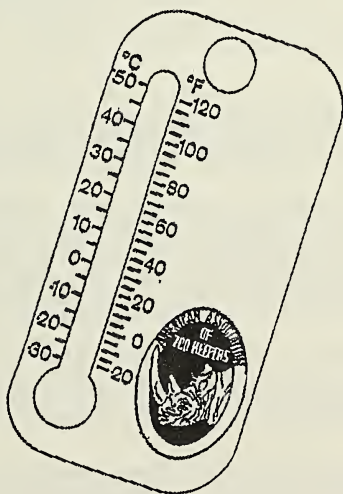
Logo Keychain Now Available



The Dallas Zoo Chapter AAZK is now offering rhino logo keychains. The front features a thermometer and the back a wind chill chart. The AAZK logo in black and white is on the front side. The thermometer is encased in durable acrylic. Approximate size is 1" x 2".

Cost per keychain is \$3.50 plus 50 cents postage when ordered singly. Orders of 5-7 keychains should add \$2.00 postage; orders of 8-12 should add \$3.00 postage. For larger bulk orders, contact the Dallas Chapter at the address below for shipping costs.

Make checks or money orders (U.S. FUNDS ONLY) payable to: Dallas AAZK Chapter. Send order to: Sara Weller, c/o Dallas Zoo, 621 E. Clarendon, Dallas, TX 75203. (214) 670-6825.



Progress of the AAZK History Committee

By
Rachel Watkins Rogers
AAZK Historian
San Diego Zoo, San Diego, CA

Since my appointment to Chair the AAZK History Committee in February 1990, I have read, computed and researched till I felt I was going to die! I can say that the Book (25th Anniversary Book) is now taking shape and looks like a bit more than just some ideas on paper. A collection of data forms and files have begun to produce some good results with a lot of information being sent in to me.

The first report was approved by the Board of Directors at the 1990 National Conference in New Orleans, with a summary provided in the Board Meeting Overview (January 1991 AKF). A special meeting with Susan Chan (AKF Editor), Janet McCoy (new Board oversight) and myself during the conference provided me with the basis to begin the process of data collection on histories of AAZK Chapters, projects, committees, etc.

The current status is seemingly stagnant, but is merely in a new phase of development. It is much easier said than done, I am finding, to put information into meaningful words that give historical justice to an account of the past. I am becoming more adept at writing and in the use of the computer in the process. It is surely a challenge, but I am learning a lot.

I entered into this project with a sense of pride and commitment to a goal that this will be my most worthwhile and rewarding work. I still have that feeling, but I would like to convey that feeling to those who will send in their information. This book is more than just another publication for AAZK - it will be something that people will read for years to come!

It may seem like an easy task to send a letter and get information back from a willing group of people, but with all the pressures we are faced with in our daily lives, some things are put on the back burner. It seems the returning of the much-needed information to the History Committee has become such an issue. I cannot tell you how important it is to me that I hear from YOU.

I promise to offer you my best work so you may be proud of the finished product, but you, the Committee Chairs/Chapter Presidents/Project Coordinators must supply the information that is needed. Many of you have returned your correspondence and have offered more than the initial information requested. I thank you for that, but there are some folks who haven't made any attempts to respond.

My pride in and commitment to AAZK has been rejuvenated by my involvement in the writing of our 25th Anniversary Book. I have learned many things about the people who formed the Association and other organizations like ours. There is a common thread that has become evident - dedication to professionalism.

From the AKF, Annual Conferences and formation of local Chapters to the day-to-day duties of the average Zoo Keeper, you can't go wrong if your work is embodied by a professional attitude. We Keepers strive for respect and recognition of our work. Let us rally together in a joint effort to provide the history of our successes so everyone can reflect on the past of an Association that has grown into an international ideal.

We are at the crossroads of the 21st Century. There is a new and exciting challenge ahead. Many of us will carry a renewed interest in the future of our zoos as we look into a changing philosophy of captive animal management and our roles in that change. Change can be our ally because it causes us to evaluate and reform, but it must be tempered with patience.

With a look at the past we can chart out the future in a methodical fashion. We are a mere quarter century old in existence, but our need for professionalism will exist as long as there are animals requiring our care.



Memo: To All AAZK Chapters and Members

From: Rachel Watkins Rogers, AAZK Historian

RE: Funding for 25th Anniversary AAZK Biography

Dear Chapters and Members of AAZK,

I am writing this announcement to all of you with the hope that you can help meet a challenge of great proportions. I am faced with the need to fund the printing of a book that many of you will find to be very important, as well as entertaining. The book is *The History of the AAZK* and its importance to the future of zoo keepers. We plan to have this book ready for AAZK's 25th Anniversary in 1992.

The San Diego Zoological Society has agreed to provide a matching donation of \$4,000.00 towards the total of \$8,000.00 needed to cover the publishing cost of our book. This is a very generous offer which I am proud to present to you on behalf of the Society. Now, we all need is to get busy and generate the first \$4,000.00.

Ideally, we would need a minimum of \$60.00 donated per Chapter to equal the pledge offered by the San Diego Zoological Society. If your Chapter cannot pledge this amount, we will gladly accept donations in any amount and we would also encourage individual AAZK members to make a donation if they would like. This will also be a way for all members to contribute to the completion of a much needed work for all our members to enjoy. All donors will be acknowledged in the publication.

This book will also make a nice addition to any current zoo keeper training programs you or your zoo may offer. Besides the history of the AAZK, its projects and programs, there will be a chapter giving the histories of other zoo and aquarium organizations that constitute our international zoo community. Foreign zoo keeper associations will also be included in this chapter.

The deadline for submission of pledges will be **30 March 1992**, and checks should be made payable to AAZK, Inc. Send your donations to me at:

Rachel Watkins Rogers, AAZK Historian
AAZK History Committee
San Diego Zoo, P.O. Box 551
San Diego, CA 92112-0551



(B&H continued from page 292)

Birds - 0.0.20 Common rheas (*Rhea americanus*) - artificially incubated/hand-raised; 0.0.2 Black-necked swan (*Cygnus melanocoryphus*) - being parent-raised.

Aquarium - 7 species of Lake Victoria cichlids. Also participating with the Ohio Dept. of Wildlife in the 10-year recovery program of the Western banded killifish (*Fundulus diaphanus menona*). This is a state endangered species originally found in tributaries of Lake Erie. Current project goals include developing an education program, breeding and documentation of life cycle to lead to reintroduction to former ranges. Also the release of the final seven Loggerhead turtles (*Caretta caretta*) will take place 18 Sept. Five of the seven will be fitted with NOAA satellite transmitters.

Pachyderms - 1.0 Baird's tapir (*Tapirus bairdii*), being hand-raised due to rejection by the mother; Second litter 1.2 African warthog (*Phacochoerus aethiopicus*) being mother-raised (captive-born parents).

Herbivore/Carnivore - born 15 May was 1.0 and on 7 July 0.1 Bongo antelope (*Tragelaphus eurycerus isaaci*). Returned to display with herd three weeks after birth. This is the fourth offspring born to female from Basel, Switzerland.



Chapter News

Memphis Zoo AAZK Chapter

Officers for 1991 are:

President.....Gail Karr
Vice Pres.....Cindy Pinger
Secretary.....Carolyn Bratcher
Treasurer.....Joe Byrd
Chapter Liaison.....Kathy Fay

We are happy to have an AAZK Chapter again after 7 years of inactivity. We have raised money for the Chapter at a number of zoo functions, including "Winter Lights", Spring Members Night, and "ZooGrass" - all evening activities, open to the public on zoo grounds. We are hoping to use some of these funds to help with Keeper Education and Sending Keepers to Conferences & Workshops.

The Memphis Zoological Society has been very supportive, especially with seed money for fundraisers. They have also generously agreed to match Keeper Education funds. Many Thanks, MZS!

Our first every 'Bowling for Rhinos' was fun and successful. We raised nearly \$2800.00. Many area businesses donated door prizes, and bowlers included zoo staff, docents, Society members and friends. Also donated were 100 T-shirts with BFR's artwork by Memphis Keeper/Artist Mike Turri. We are looking forward to next year.

--Kathy Fay, Chapter Liaison

SanDiego AAZK Chapter

The annual Chapter Member's Photo Caravan at the Wild Animal Park was held on 17 July. Three trucks carried about 30 eager members on a two-hour tour through "East/South Africa", and "Asian Plains/Swamp" exhibits.

Members fed out apple and carrot treats as they came nose-to-nose with habituated giraffe, rhino, eland, banteng, wisent, ostrich, and many deer and antelope species.

Special thanks to our guides Deanna Herfel, Gloria Kendall and Kim Wiebel; our drivers Donna Biesek, Mary Jo Hunsicker and Dennis Riggs; and our maintenance workers Bob Kirkbride and Van White, Jr. who did last minute truck fix-ups.

--Mary Dural, Chapter Liaison

Los Angeles AAZK Chapter

Our June meeting featured Rick Barongi, from the San Diego Zoo, sharing his experiences in Panama while visiting Noriega's Zoo. His fine report engendered a \$125.00 donation to assist in the training of Denis Santiago, tapir keeper.

In July, we thoroughly enjoyed the presentation of our own orangutan keeper Jeannette Tonnies, whose program recounted her unusual experiences in Borneo with Birute Galdikas and her orangutan rehabilitation project. She related a hair-raising hijacking at sea involving their small craft. Fortunately, the incident ended without bodily harm to our intrepid keeper.

The annual Buffet and Flashlight Tour fundraiser in August was a great success thanks to those who donated articles for the raffle and the keepers who donated their time to lead tours.

The Chapter has assigned a \$200 donation to the Rhino Rescue Fund and a \$500 donation to Namibia's "Sponsor a Rhino" program. Keeper Jeff Briscoe brought back a great deal of enthusiasm for Namibia's program after attending the International Rhino Conference in San Diego.

--Lois Carwile, Chapter Liaison

Columbus Zoo AAZK Chapter

The Chapter continues its support of various conservation causes through its successful aluminum and glass recycling. Totals for 1990 were:

Glass 120,141 lbs.
Aluminum 29,165 lbs.

(Continued on Page 304)



Book Review

The Chimpanzees of Gombe: Patterns of Behavior

By Jane Goodall, 1986

The Belknap Press of Harvard University Press

*Review by Mike Seidman
Keeper, Phoenix Zoo
Phoenix, AZ*

No one has done more to popularize the study of animals in the wild than has Jane Goodall. In 1962 the idea of a woman studying apes alone in Africa seemed outrageous. When she stayed on and, with obvious gentleness and patient determination, began to earn the trust of the chimpanzees, people became interested. Television was inevitable. TV showed chimps with individual personalities and then, over time, presented a series of dramatic events--a polio epidemic, a spurt of infanticide and inter-community murder which changed their lives and, along with other discoveries, forever altered our view of them. People were transfixed and Jane Goodall's name became a household word.

The success of the Gombe Stream Research Project in Tanzania, now 30 years old, illustrates the importance of long-term studies of animal populations. Social dynamics and local environmental oscillations change animal groups over time. Over and above the stories of individuals, every local group has a history different from that of other groups of the same species. Short-term studies run the risk of misinterpreting behaviors and/or missing unpredictable responses to changing circumstances. Among chimps, such behaviors as tool use, male coalitions and male-female consortship will only be clarified over a period of generations.

Once and for all, Jane Goodall's long-term study of chimps has 'dispelled the myth of the gentle, peace-loving ape' (313), which we have longed to believe of our closest relative. In chimps as in ourselves, however, great cognitive skills and a high level of sociality are linked with what often seems to be more aggressiveness than is necessary for survival.

The Chimpanzees of Gombe brings together data and statistics from 25 years of observation (mostly by trained native assistants) and attempts to extract from this mass of detail patterns or rules of social behavior, patterns of communication, dominance, friendly and aggressive interactions, grooming, sexuality, etc. Although a few ecologically oriented chapters are offered, on diet, hunting and territoriality, it is the social interactions, the great variability among both individual animals and different groups, and the extent of chimp mental capacities that seem to interest Jane Goodall most.

Chimpanzees live in what is known as a fusion-fission type of society. Although their communities are very exclusive, located within territories that are defended against other communities (by related males), individual chimps are unrestricted in their wanderings and extremely flexible in their associations. An individual may travel alone or in parties whose size and membership change daily. Social relations within these parties are highly structured by age, sex and status in a dominance hierarchy. Chimps are socially adept and manipulative, able to modify their actions on the basis of understanding and predicting the behaviors of others. Social intelligence of this sort may be necessary, Goodall believes, in order to deal with the complexities and insecurities of their extreme fusion-fission life styles.

Book Review. *Continued*

But constant uncertainty about their status in these ever-changing parties and the need for inhibition in the presence of dominant animals has produced high-strung, excitable animals, seemingly always on the verge of violence. Whether the outcome of interactions is violent or not seems to depend on several broad factors: the relationships of those involved, the level of group arousal and the context (background factors such as setting, mood or the presence or absence of allies). Much tension is released in displays, postures and gestures, but Goodall reminds us that 'the key role played by aggressive physical punishment in the ordering of chimp society must not be underestimated.' (125)

No attempt is made in this book to conceal or minimize the apparent cruelty or insensitivity (in our eyes) of so many chimp interactions. Prey items like young colobus monkeys and even infant chimps are eaten alive and males of one community may attempt to ambush and beat lone males or females (even former companions) of other communities. Chimpanzees are highly competitive within their community and only cooperative, for the most part, against strangers.

To promote harmony among such volatile individuals, appeasement and reassurance behaviors are, Goodall asserts, more highly developed than aggressive ones. Reciprocal grooming especially is a constant source of 'mutual comfort and reassurance' (404), the more so during times of social unrest. For a deeper, more radical discussion of the role of reconciliation behaviors see Peacemaking Among Primates by Frans deWaal.

It is impossible, of course, not to relate our behaviors to theirs. What is disquieting about this book is the feeling that we are looking at ourselves stripped bare of our pretensions. Perhaps we exaggerate how decisively our self-consciousness separates us from other animals. On the other hand, we must be very careful (and I don't think Goodall always is) when we compare chimps and humans. Similarity is not Identity. As the example of the gentle bonobo seems to indicate (if long-term study continues to confirm its gentleness), minor genetic difference between similar species can translate into great behavioral variance. And we must never forget the creative influence of context.

Of interest regarding context is her discussion of chimp behavior in the wild vs. in captivity. Captive animals, she points out, removed from survival pressures, with natural movements and choice of companions severely limited, put more energy into social relations. Exaggerated familiarity with each other may result in 'novel social behaviors' (584) and 'polished performances' (584). What we learn from captive studies is some of the genetic plasticity of chimps, when detached from their ecological context; what we learn from studies in the wild are behavioral strategies for survival.

Despite its length and manner of diagrams, statistics and charts (of interest to the more technically-oriented reader), The Chimpanzees of Gombe is an extremely readable book; it is written in a clear, simple yet lively style free of jargon or elaborate theorizing.

What is best in this book is its revelations of the complexity of the lives of these animals, the myriad factors, both environmental and social, that each chimp must integrate into its life in order to get what it needs; and the varying strategies each individual adopts depending on its age, sex, genetics and personal history. Above all, one is impressed by the important role played by certain individuals and the effects of unpredictable events in the history of chimpanzee societies.



L.I.N.K.
(Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 889-2919 [h].

Regional Coordinators

ALABAMA - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315
ALASKA - Vacancy
ARIZONA - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716
ARKANSAS - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens, #1 Jonesboro Dr., Little Rock, AR 72205
CALIFORNIA - Vacancy
COLORADO - John Turner, Denver Zoo, City Park, Denver, CO 800205
CONNECTICUT - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905
DELEWARE - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104
NORTHERN FLORIDA - Betty Grogan, Jacksonville Zoological Park, P.O. Box 26767, Jacksonville, FL 32218
CENTRAL/SOUTHERN FLORIDA - Rick Smith, 11707, #5 Park, Orchard Circle, Tampa, FL 33612
GEORGIA - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315
HAWAII - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Rd., Honolulu, HI 96815
IDAHO - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103
ILLINOIS - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634
INDIANA - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615
IOWA - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107
KANSAS - Vacancy
KENTUCKY - Thomas Benner, Toledo Zoo, 2700 Broadway, Toledo, OH 43609
LOUISIANA - Michelle Asselin, Audubon Park & Zoological Gardens, P.O. Box 4327, New Orleans, LA 70115
MAINE - Jeanette Nadeau (see addresses under CT)
MARYLAND - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA
MASSACHUSETTS - Jeanette Nadeau (see addresses under CT)
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MISSISSIPPI - Vacancy
MISSOURI - Vacancy
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EAST NEW YORK - Mark Holfing, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460 (212) 220-7115 [w]
WEST NEW YORK - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204
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TEXAS - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212
UTAH - John Turner, Denver Zoo, City Park, Denver, CO 800205
VERMONT - Jeanette Nadeau (see addresses under CT)
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WASHINGTON - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103
WEST VIRGINIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104
WISCONSIN - Karin Newman, Milwaukee County Zoo, 10001 W. Bluemound Rd., Milwaukee, WI 53226
WYOMING - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103
DISTRICT OF COLUMBIA - Theresa Maas (see address under PA)
Province of Ontario - Vacancy
Provinces of Manitoba & Saskatchewan - Bob Debets (see address under ND)
Province of Quebec - Chantal Routhier, Granby Zoo, 347 Rue Bourget, Granby, Quebec, Canada J2G 1E 8
Provinces of Alberta & British Columbia - Dean Treichel, Valley Zoo, Box 2359, Edmonton, Alberta, Canada T5J 2R7 (403) 483-5525 [w]

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKF, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-272-2539.

ZOO KEEPER...responsible for daily care and feeding of mammals and birds. Also grounds maintenance. Salary open. Send resume to: Gettysburg Game Farm, 320 Zoo Road, Fairfield, PA 17320.

ANIMAL KEEPER...responsible for care/maintenance of varied animal collection. Veterinary technician skills desirable. Requires two years' college in life sciences and one year's documented experience working with animals in a zoological institution. Starting salary \$15,700 plus excellent benefits. Contact: John B. Keeley, General Curator, Grassmere Wildlife Park, P.O. Box 40266, Nashville, TN 37204.

The following two (2) positions are available at the Indianapolis Zoo. Submit resumes to: Richard M. Hurst, Indianapolis Zoo, 1200 W. Washington St., Indianapolis, IN 46222.

KEEPER/PLAINS BIOME...some bird and mammal experience required to work with varied collection of plains animals. Must have interpersonal skills and be team oriented. High school degree required. College degree preferred. Salary range - \$12,500 to \$20,500.

ELEPHANT KEEPER...requires a basic understanding of animal training and its importance. Also requires the ability to accept direction and work as a member of the team in an extensive hands-on elephant program. Must have interpersonal skills and be team oriented. High school degree required. College degree preferred. Salary range - \$12,500 to \$20,500.

COMPOUND FOREMAN...position available working with wild and exotic animals at non-profit charity reserve. Zoo and/or exotic animal experience preferred; will train for specific duties. Salary negotiable / housing and utilities provided. Send resume/references to: Martine Colette, Wildlife Waystation, 14831 Little Tajunga Canyon Rd., Angeles Forest, CA 91342-5999. Position open until filled.



Chapter News (continued from page 300)

Donations this year have been made to the Franklin County Humane Society, Save the Manatee Foundation, The Puffin Project, Belize Programme, and Auburn University Raptor Rehab totaling \$2,300 to date.

The Chapter has helped host two speakers: Dr. Randall Eaton, well-known author and Dr. John Keenath from the Virginia Institute of Marine Science.

Support of Rhino conservation was the focus of Chapter efforts with Bowling for

Rhinos raising \$2,500 and activities surrounding the Rhino Walk with Michael Werikhe.

On 14 June the Chapter sponsored an auction to raise money for Chapter activities and stationary. Enough money was raised to buy new stationary on recycled paper. The Aquarium staff will be applying for the AAZPA Bean Award for its work breeding the highly endangered Lake Victoria Cichlid.

Please note Chapter address is P.O. Box 1256, Powell, OH 43065.



AAZK Membership Application

Name _____ check here if renewal []

Address _____

City _____ State/Province _____ Zip _____

☐ **\$30.00 Professional**
Full-time Keepers

☐ **\$25.00 Affiliate**
Other staff & volunteers

☐ **\$25.00 Associate**
*Those not connected with
an animal facility*

☐ **\$40.00 International**
*All members outside U.S. & Canada
regardless of category*

☐ **\$20.00 Library**
Library subscription only

☐ **\$50.00 or up Contributing or Institutional**
Individuals & Organizations

Zoo Affiliation (if any) _____

Zoo Address _____

Mail this application and check or money order (U.S. CURRENCY ONLY PLEASE), made payable to American Association of Zoo Keepers, Inc., to : AAZK Administrative Offices, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606 U.S.A.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 6" x 10" (15cm x 25 1/2cm). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Black and white photos only accepted.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31. FAX # is 913-272-2539.

DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

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Animal Keepers' Forum

October 1991

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Dedicated to Professional Animal Care

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of *Animal Keepers' Forum*. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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Brint Spencer, Beardsley Zoological Gdns.

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An Approach to Zookeeping

Pat Sammarco, Santa Fe Teaching Zoo

Zoo Infant Development Project

Harmony Frazier-Taylor, Woodland Park Zoo

AAZK Manual of Resources

Elandra Aum, Woodland Park Zoo

Exhibit Design Form

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David Luce, Fresno Zoo

Zoonotic Diseases Notebook

Bruce Clark, Toledo Zoo

Keeper Training Videotape

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Order/Distribution Center at AAZK Administrative Offices in Topeka

Liaison and Information Network for Keepers (LINK)

Coordinator - Mark de Denus, Assiniboine Park Zoo, Winnipeg, Manitoba, Canada



*This month's cover art features the Slow Loris (*Nycticebus coucang*), a nocturnal prosimian from the forests of southern and southeast Asia. So named for its slow, deliberate locomotion, these fascinating animals represent an important group in the evolution and diversity of primate species. This cover art was drawn by John H. Drake of the Duke University Primate Center, Durham, NC. Duke has a large and successful colony of these animals and has provided breeding stock for many other zoological institutions. Lorises, lemurs, bushbabies and tarsiers are among the species maintained at the conservation and behavioral research center at Duke. Thanks, John!*

Scoops and Scuttlebutt

1992 AAZPA Western Regional Conference

--submitted by J. Stephen McCusker, Director

The Reid Park Zoo is hosting the 1992 AAZPA Western Regional Conference on 29-31 March. In late March the days are warm, the skies are clear, and Tucson, AZ is infested with birds and reptiles. For those interested, we'll kick things off with a golf tournament, or a trip to the Arizona-Sonora Desert Museum, or bird watching trips to a number of areas. We'll follow this with a casual ice breaker that will take us back in time. We promise a strong program with conservation and conservation education as the thread. We'll have a full afternoon at the zoo, complete with a delicious dinner served to the sounds of Mariachis. There will be a number of stimulating sessions on Tuesday and a closing banquet that we will somehow make memorable. The hotel has plenty of space, so if groups such as SSP, TAG, Bird Curators, Educators, or other groups/committees would like to hold sessions just let us know. Break out your sunscreen early in 1992 and join us in Tucson. For more information or to be part of the program contact: Mike Flint, General Curator (602) 791-3204.

Help Wanted in the Search for Missing Book Reviewers

If anyone knows the whereabouts of Ric Urban (Houston Zoological Gardens), Deb Copeland and Tad Schoffner (both from Cleveland Metroparks Zoo), please contact: Melba T. Brown, AKF Book Review Coordinator, National Zoological Park, Dept. of Mammals, 3000 Connecticut Ave., N.W., Washington, DC 20008. Your assistance would be greatly appreciated.

ESP Project/Conservation Parking Meters Highlighted in Media Again

The August 12th issue of TIME magazine featured a story on the Conservation Meter first installed in San Francisco, with a second one at the National Aquarium in Baltimore. The article emphasizes the success and increasing demand for the meters. Because TIME has such a large circulation throughout the U.S. and other countries, this was a high exposure story for zoos, in particular the San Francisco Zoo.

VOICE OF AMERICA radio also featured the San Francisco Zoo's conservation efforts, the Conservation Parking Meter and the Ecosystem Survival Plan during broadcasts on September 13th. The broadcast reached people in Russia, the Baltics, Cuba, N. Vietnam, Eastern Europe, and Africa, just to name a few.



Coming Events

11th Annual Conference of the American Association of Zoo Veterinary Technicians

October 23-27, 1991

Dallas, TX

For further information contact: Rita Buice, Dallas Zoo, 621 E. Clarendon Drive, Dallas, TX 75203.

19th Annual Conference of the International Marine Animal Trainers Association

November 3-8, 1991

Vallejo, CA

Conference will be held at the Sheraton Hotel in Concord and will include paper sessions, poster presentations, discussion groups, SAIC/SEACO art contest, informal film and video presentations and tours at Marine World Africa USA. For further information contact: Sonny Allen, Vice President/IMATA, c/o Marine World Africa USA, Marine World Parkway, Vallejo, CA 94589.

Understanding Chimpanzees: Diversity and Survival

December 11-15, 1991

Chicago, IL

Organized by Jane Goodall, the conference will take a comparative approach to understanding the behavior of chimpanzees and bonobos; documenting behaviors and behavioral variability, investigating hypothesis that explain variations, and exploring comparative methodology. Held at the Chicago Academy of Sciences, the symposium will explore the use of video for documentation and comparison. The conference will survey the population status of chimps and bonobos, the threats to their habitat, and the development of sanctuaries. It will pursue an agenda for conservation in the wild and in captivity. To receive a preliminary program and registration information, contact: Linda Marquardt, The Chicago Academy of Sciences, 2001 N. Clark St., Chicago, IL 60614 (312) 943-6969.

The Ninth Dr. Scholl Conference on the Nutrition of Captive Animals

December 13-14, 1991

Chicago, IL

Co-sponsored by the Lincoln Park Zoological Society and the Chicago Park District, the conference will be held at the Lincoln Park Zoological Gardens. There will be general sessions on **Captive Animal Nutrition** and a special session on **Avian Nutrition**. For registration information, contact: Lois Stanley, Lincoln Park Zoo, 2200 N. Cannon Dr., Chicago, IL 60614, (312) 294-4666.

International Conference on Molluscan Conservation

September 10-12, 1992

Glasgow, Scotland

The University of Glasgow will be the venue for the conference. Sessions will include Taxonomy, Distribution, Legislation, and Conservation. For further information contact: Fred Woodward, International Conference on Molluscan Conservation, Kelvingrove Museum & Art Gallery, Kelvingrove, Glasgow G3 8AG, Great Britain. Fax: (041) 357-4537 Telephone: (041) 357-3929.



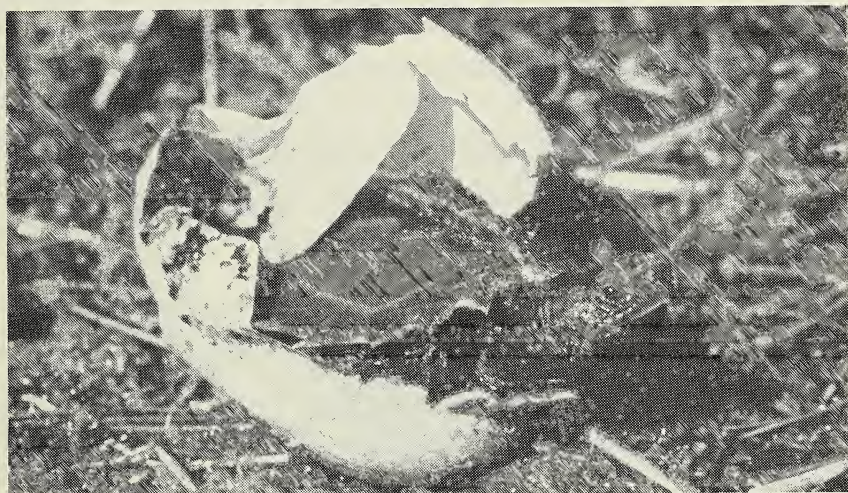
Births & Hatchings



Zoo Atlanta...a rare Malayan spiny turtle was hatched in the Zoo Atlanta reptile house on 12 July 1991 after a 106-day incubation. The 2 1/2-inch long baby is believed to be the first of this species hatched in a U.S. zoo. The parents were obtained as wild-caught juveniles from the Jackson Zoo (MS) in June of 1976. The adult turtles have produced eggs for the past three seasons. The turtle born on 12 July hatched from an egg laid on 28 March.

The spiny turtle receives its name from the many spines found around the edge of the shell at birth. The spines protect the young turtles from predators but are covered with shell growth as the turtles mature. The turtles are primarily vegetarian, but will eat some meat. Zoo Atlanta's Malayan spiny turtles are fed a diet of salads and occasionally mice.

The Malayan spiny turtle is found in the forest streams of Malaysia, Sumatra, Borneo and Thailand. The turtle is considered to be endangered by the IUCN because of deforestation in its native habitat and as a result of the pet trade. --*Lisa Littlefield/Zoo Atlanta News Release* .



Rare Malayan Spiny Turtle hatched at Zoo Atlanta on 12 July 1991.
(Photo courtesy of Zoo Atlanta)

Lion Country Safari (West Palm Beach, FL)...a Roseate spoonbill (*Ajaia ajaja*) was recently hatched. It is from one of five eggs in three nests located in the Park Nature Trail. This species, related to the ibis, is approximately 32" tall with greenish-gray heads and fushia feathers. Chicks hatch after an incubation period of 28-30 days. Both parents incubate the eggs. Roseate spoonbills may be found around Lake Okeechobee, but their main habitat is the warm Gulf of Mexico waters, ranging from Texas, Louisiana and Florida to Chile and Argentina. Although not listed on the Endangered Species List, oil drilling and predation by raccoons and egg-eating grackles have taken their toll on this species. -- *Sydney Smith/Lion Country Safari News Release*.

Births & Hatchings, Continued

Los Angeles Zoo...the month of August produced a wide selection of species babies.

Reptiles: 2 Prehensile-tailed skink (*Corucia zebrata*), an arboreal skink; 4 Rough green snake (*Ophedrys aestivas*), arboreal and semi-aquatic in shallow water, has keeled scales - hence the term rough.

Birds: 2 Sacred ibis (*Threskiornis aethiopica*), 2 Superb starlings (*Spreco superbus*), 3 Kookaburra (*Dacelo novaeguineae*), and 2 Congo peafowl (*Afropavo congensis*) - not discovered until 1936, the first living specimen was not obtained until 1949 due to World War II - Endangered.

Mammals: 1 Vampire bat (*Desmodus rotundus*), 1 Black howler (*Aloutta caraya*), 1.0 Emperor tamarin (*Saguinus imperator*) threatened status, 1 White-cheeked gibbon (*Hylobates concolor*) endangered, 1 Kikuyu colobus (*Colobus guereza kikuyuensis*) threatened, 0.1 Alpaca (*Lama glama pacos*), 0.1 Sable antelope (*Hippotragus niger*), 0.2 Giant eland (*Taurotragus derbianus*), and 0.1 Gerenuk (*Litocranius walleri*).

We were saddened by the death of one of the Giant eland mothers during the birthing process. Her baby is being hand-raised. submitted by Lois Carwile, Chapter Liaison, Los Angeles Zoo, Los Angeles, CA.

Kansas City Zoo...reports the following B&H for July-August 1991:

Mammals - 1.0 Gunther's dik-dik (*Madoqua guentheri smithi*), 0.1 Brown Swiss (*Bos taurus*).

Birds - our Chilean flamingos (*Phenicopterus chilensis*) laid several eggs, 0.0.2 hatched and were being raised by the parents. Unfortunately both chicks disappeared within a few days. Other hatchings include: 0.0.2 Black crane (*Limnocorax flavinostra*), 0.0.1 Roseate spoonbill (*Ajaia ajaja*), 0.0.2 Bali mynah (*Leucopsar rothschildi*), 0.0.1 Silver beaked tanager (*Ramphocelus carbo*). submitted by Shirley Williams, Keeper, Kansas City Zoo, Kansas City, MO.

San Antonio Zoological Gardens & Aquarium...a male Southern white rhinoceros (*Ceratotherium s. simum*) was born on 1 August. Unfortunately the calf did not survive. However, this event represents the 10th birth of this species at our institution. Twin Golden-headed lion tamarins (*Leontopithecus rosalia chrysomelas*) were born on 12 August. This is our second set of twins from these parents this year. Other mammal births include: 0.0.1 Short-tailed fruit bat (*Carollia perspicillata*), 0.0.2 Squirrel monkey (*Saimiri sciureus*), 1.0 Chapman's zebra (*Equus burchelli antiquorum*), 1.0 Arabian oryx (*Oryx leucoryx*), 0.1 Impala (*Aepyceros melampus*), 2.1 Greater kudu (*Tragelaphus s. strepciseros*), 1.1 Addra gazelle (*Gazella dama ruficollis*), and 0.1 Slender-horn gazelle (*Gazella leptoceros*).

Wrapping up this year's hatching season, we've had 26 chicks hatch during August: 0.0.2 Scarlet ibis (*Eudocimus ruber*) - bringing the total of this species' 1991 hatches up to nine; 0.0.3 Sacred ibis (*Threskiornis aethiopicus*), 0.0.14 Red junglefowl (*Gallus varius*), 0.0.4 Crested wood partridge (*Rollulus roulroul*), and 0.0.3 Painted conure (*Pyrrhura p. pictus*).

On 28 August, 1.4 Madagascar ground boa (*Acrantophis madagascariensis*) were born. This is believed to be only the third brood to be born in the United States (the first at the Fresno Zoo, and the last two at San Antonio). Our Reptile Department has also raised 1.0 Namib sand gecko (*Chondractylus angulifer*). submitted by Terrence L. Fisher, Registrar, San Antonio Zoological Gardens & Aquarium, San Antonio, TX.

Sea World of Florida (Aviculture Dept.)...significant hatchings include: 0.0.1 Toco toucan (*Ramphastos toco*), 0.0.1 Lilac breasted roller (*Coracias caudata*), 1.2 Argentine ruddy duck (*Oxyru vittata*), 5.2.1 Brazilian teal (*Amazonetta brasiliensis*), 3.6 Hooded merganser (*Mergus cuculatus*), 7.3 Hottentot teal (*Anas punctata*), 2.1 Javan whistling

Births & Hatchings, Continued

duck (*Dendrocygna javanica*), 0.1 Laysan teal (*Anas laysanensis*), 1.2 Nene geese (*Branta sandvicensis*), 5.11 North American ruddy duck (*Oxyruca j. jamaicensis*), 5.2 Red crested pochard (*Netta rufina*), 10.9 White faced whistling duck (*Dendrocygna viduata*), 0.1 White winged wood duck (*Cairina scutulata*), 0.0.6 Scarlet ibis (*Eudocimus ruber*), 0.0.1 Gentoo penguin (*Pygoscelis papua*), 0.0.1 Rockhopper penguin (*Eudyptes crestatus*), 0.0.5 King penguin (*Aptenodytes patagonicus*), and 0.0.6 Tufted puffins (*Lunda cirrhata*). submitted by J. Michael Cothran, Aviculturist, Sea World of Florida, Orlando, FL.



Just What Is The Zoo Infant Development Project Really After?

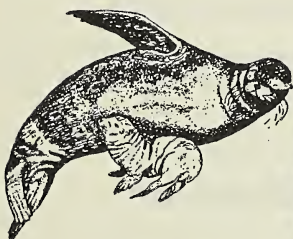
AAZK's Zoo Infant Development Project (ZIDP), specifically the Mammal Section, is seeking data on parent-raised zoo specimens for the purpose of establishing normal developmental patterns.

So if you're working with reproductive mammal groups at your zoo, you have access to data this project needs. We even have a form for you to use!

But remember, this is **ONLY** for parent-raised, not hand-raised, animals!

If you would like to participate in this project, please contact Harmony Frazier-Taylor at the Woodland Park Zoo, 5500 Phinney Avenue North, Seattle, WA 98103 for a Data Collection Form. If you'd like to talk further about the project, please feel free to call (206) 684-4866.

Your involvement in the ZIDP is valuable, so please participate!



1991 American Association of Zoo Keeper Awards

The following awards were presented at the 17th National AAZK Conference held in Toledo, OH from 6-11 October, 1991. The Jean C. Hromadka Excellence in Zoo Keeping and Meritorious Achievement Awards are selected by the AAZK Awards Committee from nominations received from the membership. Janet McCoy, Washington Park Zoo, Portland, OR chaired the Awards Committee this year. The Certificates of Recognition and Appreciation are given by the AAZK Board of Directors. The Excellence in Journalism Awards are selected by the editorial staff of *Animal Keepers' Forum*.

1991 Jean C. Hromadka Excellence in Zoo Keeping Award Recipient

In recognition of his professional attitude, true dedication, superb application of animal husbandry practices and contribution to the welfare of the animal life placed in his charge, AAZK presents the following individual with this award

Michael Illig, Metro Washington Park Zoo, Portland, OR

Specifically mentioned were outstanding dedication to the husbandry of African species and contributions to the design and construction of the Zoo's new African exhibits. Educational work, input on research projects and service to AAZK both locally and nationally were especially noted.

Meritorious Achievement Award Recipient

In recognition of outstanding achievement in the field of wildlife conservation, conservation education and animal husbandry, AAZK presents this award to:

Mark de Denus, Assiniboine Park Zoo, Winnipeg, Manitoba, Canada

Specifically for the development of ZOOQUEST®, a board game based on the world of the zoo keeper in zoological facilities that serves as an introduction to zoos, zookeeping, and wildlife conservation.

Certificates of Recognition and Appreciation Recipients

These awards are given by the AAZK Board of Directors to individuals who have provided volunteer efforts and/or services to the Association. Certificates of Appreciation are to recognize those outside of the Association and Certificates of Recognition acknowledge contributions made by AAZK members on Association projects.

Certificate of Appreciation

Chris Peterson, San Diego Zoological Society
*in appreciation for his assistance in having the AAZK Keeper
Training Videotapes duplicated*

Columbus Zoo AAZK Chapter

in appreciation to the Chapter for hosting the Pre-Conference Gathering Oct. 4-5, 1991

Certificate of Recognition

Norman Gershenz, San Francisco Zoo, San Francisco, CA
*in recognition of his efforts on behalf of the Ecosystem Survival Plan
and Conservation Parking Meters*

Rosemary Krussman, National Aquarium at Baltimore, Baltimore, MD
*in recognition of her service as Chair of the
Keeper Training Materials Identification Project*

Nanci Pintavalli, Columbus Zoo, Columbus, OH
*in recognition of her services as Chair of the
1991 Bowling for Rhinos Fundraiser*

Tim Kelly, Assiniboine Park Zoo, Winnipeg, Manitoba, Canada
*in recognition of his service as Chair of
the Conference Book Committee*

Excellence in Journalism Awards

Outstanding Mammal Article: "Hand Raising Pinnipeds"
Andrew B. Johnson, Sea World of California, San Diego, CA

Outstanding Avian Article: "Management of Boat-billed Heron at Jacksonville Zoo"
Betty A. Grogan, Jacksonville Zoo, Jacksonville, FL

**Outstanding Research Article: "Radio Tracking the Puerto Rican Crested
Toad in Guanica National Forest"**
Andrew Lentini, Metro Toronto Zoo, Toronto, Ontario, Canada

**Outstanding Behavior Article: "The Use of Operant Conditioning in
Training Husbandry Behaviors with Captive Exotic Animals"**
Gary M. Priest, San Diego Zoo, San Diego, CA

**Outstanding Veterinary article: "Successful Treatment of Chronic
Toenail Cracks in an Asian Elephant"**
**Anita Schanberger, Tawny Carlson and Jerold Brown
Phoenix Zoo, Phoenix, AZ**

Outstanding Husbandry Article: "Black Rhinoceros Nutrition"
Joseph Rindler, Columbus Zoo, Columbus, OH

Outstanding Education Article: "A Zoo Keeper's Role in Safety"
Wendy Wienker, Woodland Park Zoo, Seattle, WA

Outstanding Ichthyology Article: "Captive Care of Desert Pupfish"
Richard C. Smith, Lowry Park Zoo, Tampa, FL

**Outstanding Herpetology Article: "The Husbandry and Breeding of the
Forest Cobra at Costwold Wild Life Park"**
Nigel Platt, Costwold Wild Life Park Ltd., Great Britain

Outstanding Cover Art: "Black Rhinoceros"
February 1991 issue
Elayne Barclay, Metro Washington Park Zoo, Portland, OR

Honorable Mention Awards

- "Infant Mortality in Black Howler Monkeys", **Carolyn Kennedy, Audubon Park Zoo, New Orleans, LA** (Mammal Category)
- "Nesting Behavior in Chilean Flamingos", **Emma Cusson, Zoo Atlanta, Atlanta, GA** (Avian Category)
- "Environmental Enrichment: An overview of theory and application for captive non-human primates", **Bruce Clark, Toledo Zoo, Toledo, OH** (Behavior Category)
- "Acrylic Upper Beak Replacement in a Red-breasted Toucan", **Ed Hansen, Reid Park Zoo, Tucson, AZ** (Veterinary Category)
- "Hand-rearing Orphan Macropods", **Kitty Mallory, Possum Walk Station, Roopville, GA**, (Husbandry Category)
- "Captive Management of Socialized Timber Wolves", **Jeanne Bocconcelli, Turtle Back Zoo, West Orange, NJ**, (Husbandry Category)
- "Management Program & Breeding of the Puerto Rican Crested Toad at Metro Toronto Zoo", **Dianne Devison, Metro Toronto Zoo, Toronto, Ontario, Canada**, (Herpetology Category)
- "Siberian Tiger" Cover November 1990, **Mona Keith, Calgary Zoo, Calgary, Alberta, Canada**, (Cover Art Category)
- "Cattle Egrets" Cover October 1990, **Greeg Wanciak, New Orleans, LA**, (Cover Art Category)



AAZK Announces New Professional/Contributing Members

- | | |
|---|---|
| Deborah Caprio, Reston Farm Prk. (VA) | Bridget McMahon, Pet Farm Prk. (VA) |
| Cindy Thorstad, Zoo Atlanta (GA) | LeeAnn Rottman, Busch Gardens (FL) |
| Timothy Frank, Racine Zool. Gdns. (WI) | Jody Santos-Davey, Brookfield Zoo (IL) |
| Pam Schweitzer, Scovill Zoo (IL) | David Piening, St. Louis Zoo (MO) |
| Allison Fulenwider, Louisiana Purchase Zoo (LA) | Camille Rubinelli, Phoenix Zoo (AZ) |
| Wendy Barlow, San Diego Zoo (CA) | Cary L. Weisz, San Diego Zoo (CA) |
| Mike Wyche, CAT TALES (WA) | Debbie Wyche, CAT TALES (WA) |
| Gina Sadler, Walk in the Wild Zoo (WA) | Bernard Gallant, Magnetic Hill Zoo (NB) |

New Contributing Members

Debra G. Wheatley, Brookfield Zoo, Brookfield, IL

Renewing Contributing Members

Jeanette Rilling, Bucks County Exotic Animal Rescue, Kintnerville, PA
Luis F. Bacardi, The Lube Foundation, Inc., Gainesville, FL
Charles H. Hoessle, St. Louis Zoological Park, St. Louis, MO
Curtis Burnette, Audubon Zoo, New Orleans, LA

Publications Available

1991-92 Green Index - A state-by-state guide to the nation's environmental health by Bob Hall and Mary Lee Kerr. This book uses 256 indicators - from pipeline leaks to workplace deaths - to measure environmental conditions and policies in all 50 states. The indicators are divided into 8 chapters: air, water, energy and transportation, waste (hazardous, toxic, solid), community and workplace health, agriculture and renewable resources, state policies and Congressional leadership. Resulting text is a reference book using hard data, graphic illustrations and narrative to profile the environmental health of every state in the nation. Available from the Institute for Southern Studies, P.O. Box 531, Durham, NC 27702. Price is \$20.00 which includes postage and handling.





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Some Issues in Elephant Management - Part I

By

*Alan Roocroft, Manager, Elephant Programs
Zoological Society of San Diego, San Diego, CA*

as told to

Alison Davis Tibbitts

Elephant management is based on in-depth understanding of the physiological needs, behaviors and instinctive rituals of animals in the wild. The wide body of knowledge available on these subjects is largely ignored by captive elephant management planners. Why is this information, vital to creating an environment conducive to the survival and well-being of these animals, routinely ignored? If we know so much today, why are there so many elephant management problems?

Establishment of Policy

Webster's Dictionary defines "management" as "handling, controlling and directing" specific actions. In elephant management, such actions are best performed by personnel with sufficient experience to understand and make appropriate decisions for every animal in their care. This is not a field for indiscriminate policies based on emotional whim, political pressure, or little comprehension of the specific needs of each individual animal.

An elephant lives for sixty years. Social evolution from calf to old age is slow and without dramatic benchmarks of change. An expert elephant manager has a minimum of twenty-five years of daily contact. Respect for elephants' natural changes enables the experienced trainer to guide the animal through the relationship. The longer a human manages elephants, the more he needs to know and the more he learns from the animal.

A scant two or three years in elephant work provides the briefest window of training. Perspective gained from this short period is inadequate for meaningful and advised input to policy changes. For the best decision making, top management should also be well informed about problems encountered by those working down the management ladder.

Many elephant managers confuse real management with performance of bare minimum requirements. Elephants need a lot of movement, whether by human handling or by artificial control, as in spacing food and water stations at distant points in a large compound. Growth is stunted in any environment where activity is unchanging.

Elephants in the wild move about seeking food for 18 out of 24 hours. In captivity, assuming keepers work a typical eight-hour day, the animals are restrained for 16 hours. Such limited time for free movement, just one third of the day, cannot be to their advantage.

Elephants' requirements may dictate that conscientious keepers arrive early for work and stay late at times. Some better private organizations turn animals out at 6:00 a.m. and, if weather is clement, they remain outdoors until 11:00 p.m. Elephants do not belong to a unionized group and their individual needs come first in a well-run establishment. No excuses are acceptable for slipshod or indifferent care.

A puzzling question in elephant management policy debate is the failure to consult notable leaders in the field. They have lengthy credentials and are eager to share answers based on thirty years or more of experience.

Smokey (Robert) Jones is one of America's top trainers. Based in California, Jones consults constantly for programs throughout the United States. His uncanny insights into training of both species are irreplaceable resources.

Some Issues in Elephant Management - Part I, Continued

Gary and Kari Johnson have a ten-acre compound dedicated to elephant management in Perris, CA. The superb care given to the herd by the Johnsons and their five-man crew is second to none.

Germany's Karl Kock has devoted over forty years to elephant care and management in Hagenbeck's Tierpark, Hamburg. Kock has trained over 120 animals during his career.

As these are the most knowledgeable in the field, their insights must be valuable. Inexplicably, they are not consulted when significant management policy changes are contemplated. Their experience is not tapped; their advice is not solicited.

Training an elephant should be a very delicate process, with emphasis on should. The profession must focus immediate attention on the training of current and future zoo keepers and handlers. The January 1991 census of elephant management systems in the United States by Don RedFox of the Toledo Zoo is a valuable reference for this purpose. (See May 1991 AKF pages 148-153)

RedFox's article does not summarize his findings. His report indicates there is no established criteria for a standardized keeper training system. The profession lacks personnel with uniform levels of experience. This void permits policy-making by inexperienced and uneducated outside influences while providing for the elephants' needs becomes a secondary consideration.

Two-Man Policy

The serious lack of experience plaguing elephant management results directly from the fact zoos no longer work their elephants. It is irrelevant whether elephants work to generate revenue or because it is good husbandry. Rides and shows are being phased out at most facilities. This decision eliminated a valuable opportunity for keepers to gain experience. Insufficiently experienced staff are being promoted to positions where their decisions adversely affect the profession. These people will not implement programs beyond their own capabilities. For example, if rides are requested and the manager cannot handle rides, the program is dropped. An opportunity to gain experience is lost.

The two-person policy, based on "safety in numbers" is an instance of such decision making. While labor intensive training and daily animal care activities require two or more keepers, having two people present at all times will not guarantee safety. This policy may seem justifiable when doubt exists whether employees can control the animals. However, if two people are needed because a trainer has so little control over an elephant, then he or she should not be near the animal in the first place.

Logic dictates the question -- what next after two keepers get hurt?

Use of Restraints -- Historical Perspective

History shows elephants and humans working in a harmonious employment relationship for over 4,000 years throughout Europe, the Middle East and the Orient. Elephants in Asia are governed by their physiological needs and the natural boundaries these needs impose. When the animals are off restraints but not working, they are working at eating. They are not playing.

Variations within management systems and the use of restraints depend upon the terrain and culture. Examples include:

1) Sri Lankan workers restrain elephants similarly to the West. Population encroachment is shrinking the jungles and the elephants cannot roam freely. The long day begins early, so the elephants are on the job and free of restraint for many working hours.

Some Issues in Elephant Management - Part I, Continued

2) Burma, Thailand and other Asian countries which employ elephants release them into the jungle to forage at day's end. Both the number of hours spent eating and the amount of movement required are determined by seasonal food supplies and distance traveled to find them.

3) Elephants in religious and ceremonial life live as those in the West. They spend nearly all day on restraints, standing in one place. The results are neurotic behaviors and aggression toward keepers. These actions also occur in zoos where the elephants are over-restricted and underemployed.

Some temple elephants do not work because of religious beliefs. While zoo elephants often do not work because 1) the need is not understood, and/or 2) keepers lack the necessary skills to handle the elephants and execute the work.

Use of Restraints in Zoo Elephants

The term "restraints" is commonly interpreted to mean "enslavement or lack of freedom". People inexperienced with elephants apply this meaning anthropomorphically rather than by properly defining "restraint" as "holding back, controlling, checking".

No one wants elephants to be hurt. For reasons not clearly understood, pressure is on elephant managers to alter long-standing and successful policy regarding use of restraints in the barn at night. Change is being driven by people without sufficient experience to foresee the inherent dangers in eliminating restraints.

Three factors contribute to the perceived need for policy revision. First, many institutions struggle to balance revenues against manpower and budget requirements. Second, keepers' timetables and working hours often do not coincide with the animals' needs. Third, outside influence from misinformed animal activists cloud the issue. These factors, together with uneducated elephant and zoo managers, are a formula for potential disaster.

Restraints protect the elephants when they cannot retreat from each other in the barn. Keeper safety is the secondary issue. Experienced trainers know their animals and will determine the order of precedence in housing which guarantees each one maximum comfort and safety.

The barn should be a secure sanctuary regardless of each elephant's place in the herd structure. Removing chains at night scrambles hierarchical relationships precisely when human intervention is absent. This situation creates major potential for harm, and the number of animals involved is not a significant factor in the problem.

Restraints prevent dominant animals from bullying sub-dominants who have varying degrees of self-confidence. These unsure animals need the security of knowing which place is their territory. Restraining all elephants allows the less secure to eat without fear of their food being stolen. They will sleep peacefully, unafraid of assault.

Unrestricted animals soil their environment thoroughly. Allowing them to wallow in their own excrement during the night does not improve their living conditions.

The concept of freedom from restraints may have some favorable aspects. By permitting free roaming without substantial modification of facilities, removal of moats, and access to indoors during inclement weather, equates to inferior elephant management.

Individual stalls offer an alternate method of housing without restraints. But highly social herd animals do not fair well in isolation over lengthy periods of time, and the impact on stereotypic behavior and propagation is not clear. It is unknown whether elephants regard stalls as security or solitary confinement.

Some Issues in Elephant Management - Part I, Continued

Older elephants may be the only ones who could be comfortable when going without restraints. They are usually less interested in social interaction. They eat more slowly, like to rest against the wall of the barn, are less mobile, which results in reduced environmental soiling. However, younger animals bully them, leading to lessened self-confidence, fear, and all the issues previously discussed.

Evidence shows that elephant housing methods, with or without restraints, does not affect development of bed sores. Some facilities use a bed of straw to relieve pressure on the head, especially if the animal is prone to sores on one side only. Such an animal should be retethered to lie with the other side of her head down.

Sores can develop if the animal always lies facing one direction because she is bothered by a barrier or an incompatible stall mate. She does not want to leave herself vulnerable by facing away from her antagonist.

To summarize: is it wise or fair to release unrestrained animals into a situation each night which is full of unknowns for them, after all the time required to: 1) develop a delicate artificial social structure among unrelated elephants; 2) create a secure environment for every individual of the herd; and 3) develop a smooth, virtually problem-free transition for new arrivals?

The answer to whether elephants should be on restraints is yes, provided they are allowed time to roam freely for an acceptable amount of the time. An elephant's day begins at sunrise. Thus keepers must arrive early for work, clean the barn, wash the elephants and release them into the outside yard. They may have to go home later also, to provide for maximum unrestrained time in the yard.

If you wish to discuss any of these subjects, please contact: *Alan Roocroft, San Diego Wild Animal Park, 15500 San Pasqual Valley Road, Escondido, CA 92027 - phone (619) 738-5063.*

New Bumper Sticker Offered for Sale



The Jacksonville, FL Chapter of the AAZK have designed and now offer for purchase the bumper sticker pictured here. This silk-screened 3" x 9" bumper sticker has kelly green lettering, black border/center line and the nationally recognized AAZK logo on a white background. These bumper stickers are now offered at the low price of \$2.00 each for 1-49 and \$1.55 each for 50 or more. The postage is an additional \$.30 per each 5 bumper stickers ordered.

If you would be interested in purchasing these for your fundraisers or to be used as a sales item in your gift shop - an item that promotes both Zoos and AAZK, please contact either Micki Corcoran or Ann Hinton at this address: Jacksonville AAZK Chapter, 8605 Zoo Road, Jacksonville, FL 32218.



Chapter News

San Diego AAZK Chapter

August Program...Dr. Jack Allen, D.V.M., Associate Veterinarian at the Wild Animal Park, spoke on "The Tagua (Chacoan peccary) Project in Paraguay." The program was held at the WAP's Mombasa Pavilion.

The project, Proyecto Tagua, began in 1986 under the guidance of Dr. Kurt Benirschke. Veterinary involvement started in 1990. Dr. Allen gave an excellent slide presentation as he discussed the history and geography of Paraguay; the geographic range of the Tagua; pen construction with the need for visual barriers; how the 25 animals in the project were trapped and darted; and biking 26 miles from the nearest town to the remote project site.

Veterinary work consisted of: complete physicals (including heart and lungs), blood work, fecal samples, parasite checks, oral exams (problems with decay and fractured canine teeth are common), bite wounds with maggots, weights, measurements, inspection of glands, ear tagging, notching, and color-coding.

Habitat loss is the number one reason the population of the Chacoan Peccary has decreased: clear-cutting of the Chaco (scrub/thorn) land for cattle raising and hay growing.

Dr. Allen remarked that there's very little scientific literature on the Tagua and nutritional requirements are not known. He stressed the need for studies on nutrition, behavior and husbandry.

The biggest problem currently is overcrowding at the project site and continued funding is needed. Those who attended left feeling that the Tagua is a species well worth saving.

--Mary Dural, Chapter Liaison

Beardsley Zoo AAZK Chapter

The Beardsley Zoo Chapter's summer lecture series was a big hit this year and we hope to expand it for next year. Both

talks were given to a filled-to-capacity crowd in our Education Center.

Our first lecture, entitled "An African Adventure at the Zoo", was given in July. Noted wildlife photographer and safari leader Mike Devlin and his wife Betsey conducted a slide show on his adventures, concentrating on the plight of the African elephant and Black rhino. Along with the slides he presented a number of biofacts and took questions from the audience.

Our second lecture held in August was entitled "A Tropical Afternoon at the Zoo" and featured our Zoo Director, Gregg Dancho. Director Dancho presented a slide show on his many trips to South American rainforests. With the help of AAZK Chapter members, he also brought several of our zoo animals out to meet the public. A blow gun demonstration, along with other tropical artifacts, capped the lecture.

--Linda Oltra, President

Central Florida Chapter

New Chapter Officers are:

President.....Debbie Zombeck
Vice Pres.....J. Michael Cothran
Secretary.....Laura Reynolds
Treasurer.....Bonnie Breibeil
Chapter Liaison...Sandy Wieprokowski

Thanks to everyone who has contributed fund-raiser ideas. There has been an incredible amount of input sent to us and we sincerely appreciate all of the information. Hopefully in the future we will be able to share these ideas with other interested chapters by offering a collective packet.

We recently sent monies to Ann Young - Avian Rehabilitation. AY - AR is a private, self-funded rehab for injured wild birds. The majority of zoos and animal institutions in the central Florida area refer AY- AR to the general public or transfer the birds themselves. It is staffed by volunteers and any financial support is used for necessary equipment and supplies.

In other news, our Chapter members are readying for this year's AAZK

Chapter News, Continued

Conference. Chapter President Debbie Zombeck will be presenting a paper on Project Puffin.

Former Vice Pres. Liz Yerian is leaving the Central Florida area. Liz's husband, Art Yerian, has accepted the position of curator for a Ft. Lauderdale Avian Park. Good luck and best wishes to both Art and Liz.

We would like to say thank you and acknowledge this past year's guest speakers - Mary Healey, Curator/Discovery Island (Disney World); Dr. Terry Campbell DVM, Sea World of Florida; Brendalee Philips and Lorri Sims, Animal Care Specialists Sea World of Florida; and Burt Westbrook, Supervisor of the World Famous Cyldelesdales.

--J. Michael Cothran, V.P.

Los Angeles AAZK Chapter

Our September meeting featured Thaya duBois, Behavioral Enrichment Director. Her talk, highlighted by excellent slides, gave an overview of the program's development, philosophy, achievements, and misadventures. A small, but loyal group of volunteers are helping to devise ideas for feeders, innovative ways of distributing food to encourage foraging, activity items, exhibit plantings and renovations. The projects are evaluated continuously for their merit.

Jennifer Chatfield, gorilla keeper, showed the video "Urban Gorilla" which includes a segment pertaining to our animals. Jennifer, by the way, received a letter of commendation from the Digit Fund for her work gathering petitions that helped to encourage Rawanda's government to protect the gorillas' habitat during the rebel uprising. An army unit was sent to the national park which was being used as a rebel base.

--Lois Carwile, Chapter Liaison

Beardsley Zoo AAZK Chapter Offers Flying Saucers

The Beardsley Zoo Chapter is pleased to offer for sale recycled plastic flying saucers (frisbees) emblazoned with the AAZK logo in black on bright green. Just the perfect thing to toss around at those after-hours staff get togethers! The flyers are available for \$5.00 each by contacting Chapter Vice President Rob Tomas, c/o Beardsley Zoo, 1875 Noble Avenue, Bridgeport, CT 06610.



Dietary Studies at London Zoo Aid Orangutan's Skin Problem

Victoria, a seven-year-old orangutan at London Zoo suffered from a dry skin condition on her hands and feet and from a dull coat. Now, thanks to treatment by Veterinary Officer Suzanne Jackson, and Efamol Vet, Victoria is on the road to recovery.

Suzanne thought Victoria's problem was related to a diet deficient in Essential Fatty Acids (EFAs). Her studies, part of London Zoo's overall nutrition program to ensure each zoo animal has the right diet, were sponsored by Efamol Vet, the veterinary arm of Efamol Ltd., leaders in fatty acid research.

The treatment involved supplementation with EfaVet capsules, containing Evening Primrose Oil, in combination with fish oils, vitamins and minerals. Evening Primrose Oil is well known as a rich natural source of EFAs. Victoria and other orangutans and chimps at the Zoo with similar skin problems received the capsules over a 24-week period using a protocol that had been designed to allow for environmental factors. There appeared to be a marked improvement in Victoria's condition after four weeks. The results are to be published in a scientific journal later this year. EfaVet capsules are already used widely to treat skin and coat conditions in dogs and cats.





Book Review

Editor's note: This month we are featuring pre-holiday reviews of books suitable for children and young adult readers. We hope this will be helpful to those of you looking for gifts for young readers for the upcoming holidays.

POMONA: The Birth of a Penguin

By Catherine Paladino
Franklin Watts, 1991
387 Park Ave. S., NY, NY
33 pgs hardback \$12.95

*Review by Morna Holden
Zookeeper, National Zoo
Washington, DC*

This book gives a detailed and intimate account of the hatching and early development of a black-footed penguin. Clear, sharp photography and artwork draw the narrative together into a delightful life adventure. Scientific terms found in bold print in the text are defined in the glossary to enhance any reader's vocabulary. The closing conservation message makes one truly appreciate the dedication of the aquarium staff and the importance of maintaining a strong captive population of these delightful birds for the future.

Alligators to Zooplankton: A Dictionary of Water Babies

By Dr. Les Kaufman & Staff of the New England Aquarium
Franklin Watts, 1991
387 Park Ave. S., NY, NY
56 pgs hardback \$14.95

*Review by Melba T. Brown
Mammal Keeper
National Zoo, Washington, DC*

Dr. Les Kaufman and the Staff of the New England Aquarium have put together a children's book that is chock-full of information. Alligators to Zooplankton: A Dictionary of Water Babies may be only 56 pages, but its colorful presentation includes world map endsheets illustrating plankton distribution and informational blocks listing species numbers, young and adult sizes, habitat and special features, i.e. the potential use of barnacle glue in dentistry. Also, there is a glossary of italicized words found in the text, pronunciations, a bibliography and an index. The final section challenges the reader to guess what the pictured babies will grow up to look like - it is not easy.

There are many interesting photographs which nicely compliment the text and the captions include taxonomic nomenclature. The book focuses on the reproduction and development of many animals such as cuttlefish, jacana, quahog, African clawed frog and ocean sunfish. This publication had a special quality in that it does not just present natural history information, but it makes the young reader think in terms of conservation as well.

Dolphins and Porpoises

by Janelle Hatherly and Delia Nicholls

Alligators and Crocodiles

by Leslie Dow

Facts on File, Inc., 1990
460 Park Ave. S., NY, NY 10016
68 pgs hardback \$17.95 each

*Review by Melba T. Brown
Pinniped Keeper
National Zoo, Washington, DC*

Dolphins and Porpoises and Alligators and Crocodiles are two books from the "Great Creatures of the World" series. This collection, which also includes Whales by Lesley Dow and Sharks by Sheena Coupe, is designed for young adult readers.

Book Review Special Section - Young People's Books, Continued

Dolphins and Porpoises and Alligators and Crocodiles present information in such a way that the reader will turn the pages quickly to discover more. The young adult reader learns about evolution, classification, many aspects of natural history, legends, stories and much more. The written material is concise and upbeat and the photographs are just as informative as the text. Each book boasts many colorful diagrams, lists of common and scientific names, a glossary and an index. Throughout the chapters are 'Did you know?' tidbits stating little known facts about different aspects of the creatures.

In Dolphins and Porpoises, Hatherly and Nicholls expose the reader to the dangers facing these animals in the wild, namely tuna fishermen and their purse-seine nets which can be as much as '10 football fields long and one football field deep'. Also, there are tips on helping stranded dolphins and porpoises. Useful information is given in Alligators and Crocodiles concerning attacks. For example, which species are more likely to prey on humans, reasons why they attack and how the execution is carried out. There is a list of nine precautions to consider when venturing into alligator or crocodile territory. The final chapter deals with the conservation issue and discusses CITES. Appendix I and Appendix II listings of alligators and crocodiles are provided as well.

These two publications are very well put together and I would recommend them to school libraries and anyone who would like to introduce their children to these fascinating animals.

A Reef Comes to Life: Creating an Undersea Exhibit

by Nat Segaloff and Paul Erickson

Franklin Watts 1991

387 Park Avenue South, NY, NY

40 pgs hardback \$13.95

Review by Vincent F. Rico

Animal Keeper, Australia Pavillion

National Zoological Park

The overall layout of this book is very appealing and is quite informative for young readers. The map at the beginning, which shows the areas of the world where coral reefs are found as well as the three types of reef structures, is quite helpful. The photography is well-done and it compliments the text nicely. The illustrations are easy to follow and they provide further understanding of the written material. The glossary is excellent and the bibliography helpful to those who would care to further investigate coral reefs. The shadows over the page numbers which depicts the different coral types add a nice touch.

The construction and installation of the exhibit is systematically laid out, giving an excellent behind-the-scenes look at how a coral reef exhibit is built. In conclusion, it is refreshing to see an aquarium producing life-like reproductions of corals as well as conquering the challenge to duplicate nature. This book would make a nice introduction for young readers and adults. It gives an intriguing look into the life of a coral reef.

The Red Sea

by Kenneth Mallory

Franklin Watts, 1991

387 Park Avenue South, NY, NY

Hardback \$13.95

Review by Thomas E. Miller

Mammal Keeper

National Zoological Park

The five small chapters in this book are well-written. The text is concise and it gives the reader an enlightening look at the Red Sea. There are many outstanding photographs including pictures of fishes and coral reefs. Mallory presents interesting details of underwater life. The Red Sea is a well-constructed book with excellent paper and print. It is wonderful reading for young ones and old ones alike. Many of its readers will have a pleasant surprise.

Book Review Special Section - Young People's Books, Continued

Do Fishes Get Thirsty? Questions Answered by the Staff of the New England Aquarium

by Dr. Les Kaufman & Staff of the New England Aquarium
Franklin Watts, 1991
387 Park Avenue South, NY, NY
40 pgs Hardback \$13.95

*Review by Ed Bronikowski
Curator, The Florida Aquarium*

A potpourri of two dozen questions on aquatic life are briefly and factually answered. Colorful photographs and illustrations are liberally included throughout the book. Questions ranging from "Why Do We Need Public Aquariums?" to "Are There Really Sea Monsters?" are dispensed within a paragraph or two of easy-to-read answers. Further topics cover sharks, whales, evolution, conservation, aquaculture and the biology of fishes.

The book's jacket describes this publication as a "feast of facts for fish lovers of all ages". Its overall style appears to target elementary school naturalists and it is probably from this group that most of the questions were drawn. However, at \$13.95 for forty pages and twenty-four topics, this book is likely to be considered a kind of junior "coffee table" publication. The explanations are not likely to be used as reference material for biology class reports but they can settle school yard debates.

The photographs and illustrations are generally well done. However, this book could have benefitted from more careful editing. One photograph is printed upside-down. A definition of the terms 'fish and fishes' is violated on the very next page. Common name pronunciation is provided for goby but not for pirarucu or wrasse. There is an explanation for the use of scientific names but no examples. The glossary was helpful but could easily have been expanded. An analogy for evolutionary principles using the Model T Ford was unclear to at least one eleven-year-old reader helping with this review.

An appealing title and attractive package are the book's best features. Its price will probably deter many from adding it to their home libraries. Do Fishes Get Thirsty? would be a fun reference tool for elementary school libraries as well as aquarium and zoo learning labs. The photographs and illustrations may inspire young readers to find references of greater depth.

PIGEONS

by Miriam Schlein/Photos by Margaret Miller
Thomas Y. Crowell, 1989
10 East 53rd St., NY, NY 10022
49 pgs Hardback \$12.95

*Review by Melba T. Brown
Keeper, National Zoo*

What is a young pigeon called? How many taste buds do pigeons have? What do pigeons, salmon and monarch butterflies all have in common? What famous pigeon is preserved at the Smithsonian Institution and why? The answers to these questions are found in Pigeons. Schlein presents a great deal of information in this celebration of our common city dwellers. The reader learns about natural history, the historical presence of these birds, word etymologies relating to pigeons and much more. Miller's black and white photographs paint a rare portrait of the species and the viewer is even privy to the raising of the young. This publication would make an excellent addition to any child's library. After reading this book one comes away with a more positive impression of these animals.

Feathers Like a Rainbow: An Amazon Indian Tale

by Flora
Harper and Row, 1989
10 East 53rd St., NY, NY 10022
25 pgs. Hardback \$13.95

*Review by Melba T. Brown
Keeper, National Zoo*

This delightful little book, written for children four to eight years old, is sure to attract the attention of very young readers. This tale tells of a drab gray-winged trumpeter's desire to be colorful like 'flowers and butterflies'. His mother ventures off in search of many hues

Book Review Special Section - Young People's Books, Continued

along the Amazon River. She meets up with other birds wishing for spectacular feathers as well - macaw, woodpecker, cock-of-the-rock, toucan and ibis. Without giving away the rest of the story, a hummingbird enters the scene and the pursuit of colors ensues. Not only is the story cute, but the artwork, also by Flora, adds another dimension to the tale taking the reader into the depths of the rainforest. The author creatively combines fact with fiction. Any child who loves folktales would enjoy this book tremendously.

WHALES

by Seymour Simon
Thomas Y. Crowell, 1989
10 East 53rd St., NY, NY
40 pgs. Hardback \$14.95

*Review by Melba T. Brown
Keeper, National Zoo*

Imagine having a tongue that weighs as much as an elephant. What about having a tooth that weighs more than a half a pound. Consider feeding your 'little one' 100 gallons of milk a day and having it gain up to 200 pounds daily. Whales introduces young readers to the world of these mammoth marine mammals. This book specifically targets five to eight year olds. The text covers much material in a concise manner. The photography is impressive and includes pictures of a narwhal trio and a gray whale 'grubbing'. The many other blue-hued photos show a variety of whales engaged in their aquatic activities. Simon concludes the book with a brief discussion of the International Whaling Commission and he encourages children to think about the future of whales.

Last Chance to See

by Douglas Adams and Mark Carwardine
Harmony Books, 1990
New York, NY 10022
220 pgs, hardback \$20.00

*Review by Debbie Baker
Zookeeper, Folsom Children's Zoo
Lincoln, NE*

In 1985 Douglas Adams, author of the popular Hitchhikers Trilogy, and Mark Carwardine, a zoologist with World Wildlife Fund, were sent to Madagascar in search of the elusive Aye-Aye. This was the beginning of an adventure that would take them to far places in search of some of the world's most exotic and endangered creatures.

The other stops on their journey would include: Indonesia to meet the giant Komodo dragon; Africa to see the mountain gorilla and northern white rhino; New Zealand to look for the old night parrots, or Kakapos; China to try and locate the Baiji, or Yangtze River dolphin; and the conservation center on the Island of Mauritius. Each place had its own unique story to tell.

Their discovery of the Komodo dragon was disappointing. Already overfed dragons would be thrown a slaughtered goat to entertain the visiting tourists. The author addresses tourism and its effect on local wildlife and economy here and during their visit to the mountain gorilla.

In Africa they finally got a close look at the northern white rhino after getting lost in Garamba National Park, running out of water, and mistakenly stalking a termite mound for almost an hour. It is also here that the author engages in a battle with unruly mosquito netting and loses.

After hiring a rangy, weather-beaten kakapo tracker, they succeeded in finding one of the forty or so remaining on Codfish Island. These parrots, like much of the endemic fauna in New Zealand, have been nearly wiped out from the introduction of predators to their environment.

The only Baiji they saw was the single one held in captivity at the Hydrobiology Institute in Wuhan. The noise pollution on the Yangtze River and government bureaucracy makes the future of this dolphin perilous at best.

Book Review Special Section - Young People's Books, Continued

At the conservation center on Mauritius they experienced a variety of exotic birds and plants in addition to the Rodrigues Fruit Bat. Through the efforts of captive breeding, the population of this bat has rebounded significantly in the last fifteen years.

Throughout the book, particularly in the epilogue, the author makes bold, powerful statements about our species and how we have treated the earth and other species with which we share it. While on Mauritius he had this to say about the extinction of the Dodo: "It's easy to think that as a result of the extinction of the Dodo we are now sadder and wiser, but there's a lot of evidence to suggest that we are merely sadder and better informed." He asks if this is really the last chance to see some of these animals. He then suggests that it may be if we do not alter the current course of events.

Last Chance to See discusses the ecology and natural history of animals in an easy-to-read, enjoyable manner. It gives a glimpse in writing, and a few color pictures, of animals most of us will never see. Although the stories are often humorous and entertaining, the importance of conservation and appreciation of the world's fauna are never compromised. Included are an index of names and addresses of conservation projects mentioned in the book for anyone wishing to contribute to these organizations. The author gives cautious hope to the preservation of the these and other endangered species knowing that: "without them, the world would be a poorer, darken, lonelier place."

Ducks Don't Get Wet

by Augusta Goldin

Illustrated by Leonard Kessler

Harper & Row, 1969, 1989

10 East 53rd St., NY, NY 10022

32 pgs, softcover \$4.50

Review by Melba T. Brown

Pinniped Keeper

National Zoological Park

If anyone knows a budding ornithologist between the ages of four and eight years, then Ducks Don't Get Wet is the book for them. Goldin presents succinct information about ducks including behaviors such as preening, diving, migration and feeding. One learns about specific ducks including canvasbacks, buffleheads, mergansers and shovelers. Also, there are two experiments which children can conduct to help them understand why "ducks don't get wet". Kessler's illustrations match the topics covered very well. They are brightly colored and graphic. This little publication would please any child.

Big Red Barn

by Margaret Wise Brown

Pictures by Felicia Bond

Harper & Row, 1989

10 East 53rd St., NY, NY 10022

31 pgs. hardback

Reviews by Angela Marlow

Primate Keeper

National Zoological Park

This is a children's book which introduces different farm animals that live in a big red barn. There is a very simple rhyming text which tells about a day in the life of the animals. The illustrations are well done and realistic colors are used for the scenery and animals. The ages suggested for this book are 2-6 years. I feel it would be a good choice for ages 2-4 years.

Dinosaurs, Dinosaurs

by Byron Barton

Thomas Y. Crowell, 1989

10 East 53rd St., NY, NY 10022

33 pgs., hardback \$7.95

This is a book with endpapers showing vividly colored drawings of dinosaurs, their names and pronunciations. These illustrations show how dinosaurs differed in size. The story explains the differences in the body characteristics of various prehistoric animals, e.g. teeth and spikes. Also, it shows a clutch of eggs, baby dinosaurs hatching and some maternal

Book Review Special Section - Young People's Books, Continued

care of the young. The dinosaurs were drawn in the habitat where they existed. I found this book to be very good except it portrayed dinosaurs as solitary animals, with the exception of one mother. We know that some of them lived in herds. They suggested ages for this book are 3-6 years; however, I found it more appropriate for ages 2-4 years. Dinosaurs, Dinosaurs is a good learning tool.

National Wildlife Federation: Book of Endangered Species

by Beth Lyons Illustrated by Ken Maestas

Earthbooks, Inc., 1991

7000 North Broadway, Building One, Suite 103,

Denver, CO 80221

Softcover 66 pgs

Review by Melba T. Brown

Seals./ sea lions

National Zoological Park

This coloring book features thirty species which are rare, vulnerable or in danger of extinction. The format is very basic and natural history information and maps are provided. The table of contents lists animals indigenous to the various continents. The species highlighted include the goliath frog, numbat, Pyrenean desman and Galapagos penguin. Lyons discusses the many threats facing wildlife including hunting, habitat loss and pollution among other things. There are true-to-life depictions with captions indicating the appropriate colors to use. The book concludes with a list of conservation organizations. A great example is set by the printing of this publication on recycled paper with soybean ink. The Book of Endangered Species is an effective learning tool and it would easily enhance the classroom experience.

Both Lyons and Maestas have another publication which is very similar in design to the above coloring book. It is National Wildlife Federation: Book of Dinosaurs and Other Prehistoric Animals.

(EDITOR'S NOTE: Two other coloring books arrived too close to deadline to be sent out for review. Both of these are sponsored by the National Wildlife Federation and the National Audubon Society. Roger Tory Peterson serves as Consulting Editor on both. These books are part of a series published by Houghton Mifflin entitled The Peterson Field Guide Coloring Books. Topics covered in the series are Birds, Butterflies, dinosaurs, Endangered Wildlife, Fishes, Forests, Mammals, Reptiles, Seashores, Shells, Tropical Forests and Wildflowers.

The two newest additions to the series - A Field Guide to Tropical Forests (by John Kricher/Illustrations by Gordon Morrison) and A Field Guide to Endangered Wildlife (by John Kricher and Richard K. Walton/Illustrations by Gordon Morrison) - each contain 300 color and black and white illustrations. Excellent natural history information is given on the species (both plant and animal) covered and the illustrations are definitely true-to-life. Color plates at the front and back of each book give accurate color representations of the species for youngsters to use when coloring the pictures within the book. Cost for each book is \$4.95. Printed on recycled paper. Houghton Mifflin Co., 2 Park St., Boston, MA 02108.)



Call for Book Reviewers

Do you enjoy reading? How about writing? If you answered yes to both questions, then why not consider reviewing a book for publication in AKF. The Book Review Coordinators are currently seeking individuals interested in this project. If you would like to participate, please fill out the following form and submit it to the appropriate address:

General interest:

Melba T. Brown
AKF Book Review Coordinator
National Zoological Park, Dept. of Mammals
3000 Connecticut Ave. NW
Washington, DC 20008

Technical, semi-technical:

Tom Aversa
AKF Book Review Coordinator
128 Selwyn Street
Roslindale, MA 02131

Topics selected should be appropriate for our readership. It might be of interest to know that once you review a book, you may add it to your personal library. Also, AKF may receive books from publishers that need to be reviewed. Please contact us if you are interested in a list of titles.

--Melba Brown and Tom Aversa, Project Coordinators

BOOK REVIEW REQUEST FORM

1.) Your name and mailing address: _____

2.) Please provide the following information for as many as three books you would like to review:

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Copyright date: _____

#2: Title: _____
Author: _____
Publisher's name and address: _____

Copyright date: _____

#3: Title: _____
Author: _____
Publisher's name and address: _____

Copyright date: _____

King Penguin Egg Incubation and Chick Rearing - A Group Effort

By
Richard C. Smith, Keeper
formerly at St. Louis Zoo, St. Louis, MO
now at Lowry Park Zoo, Tampa, FL

Abstract

During the 1989-90 King penguin (*Aptenodytes patagonicus*) breeding season, the St. Louis Zoo successfully hatched and raised two chicks. Previous multiple hatches occurred in 1978 and 1983. One male sired both chicks in 1990. The first chick hatched was incubated by the single parent and raised by the parent and most of the colony. The second chick was incubated and raised by an established pair. One female laid two fertile eggs during the nesting season. The interval between eggs was 34 days.

Introduction

The St. Louis Zoo's King penguins are kept indoors at the Aquatic House. The colony consists of 3.5 adults and 0.01 subadult. 3.3.1 Adelie penguins (*Pygoscelis adeliae*) are also residents in the display. Each bird is banded with colored cable ties on one flipper. I will be referring to individuals by their wing band and the band color (i.e. blue left meaning left wing banded with blue cable tie). All of the Kings are hand-fed herring (*Clupea ssp.*) and mackerel (*Scomber ssp.*) twice a day. The diet is supplemented daily with one vitamin tablet (Sea Tab®) per bird.

The glass fronted display has 585 ft. (178.31 m) fiberglass deck space and a 3600 gal. (13,623.5 liters) pool (see Figure 1). Air temperature is maintained at 40-50° F (5-10° C) and the deck and pool are drained and cleaned with a disinfectant (Roccal D®). The pool water is sand filtered. Five overhead showers rinse the deck hourly. The display is illuminated by eight 4 ft. double fluorescent Vitalites® and nine incandescent flood lights. All the lights are timer controlled to simulate the southern hemisphere seasons (Michaels, 1984).

King penguins lay one egg which is incubated for 54-56 days on the top of their feet. In the wild, Kings have a staggered breeding, egg laying and fledgling where two eggs are laid every three years. The staggered behavior is a result of chick raising that takes 13-14 months. At the St. Louis Zoo the chicks are pulled right before the adults molt. This reduces stress during molting and also helps wean the chicks. Chicks are moved to a temporary cage, out of public view. They are force fed until they learn to hand-feed. Meanwhile the Kings on display will have laid and hatched their eggs.

On 11 November 1989, most of the Kings had completed their molt. Several of them were observed in breeding behavior. These displays continued for the next month. By 10 December, the first egg was laid by blue left. On 14 December 1990, blue left had its first egg accidentally knocked loose and she abandoned the egg. The other Kings remained sexually active and were consuming food at an accelerated rate. The egg was placed into an incubator. Breeding season continued with single eggs being laid by white right female (paired with yellow left male) on 21 December 1989 and green right female (paired with orange right) on January 1990. This second egg was infertile.

On 5 January 1990 male white left was observed being followed by two females, black right and blue left. The two birds, blue and black, were quarreling. Mueller Schwarze (1984) described similar scenarios in the Emperor penguins, where vocal and visual cues are confused by neighboring females often resulting in a trio formation. On 13 January blue left laid her second egg of the season. Black right and white left were paired nearby and threatening blue left. By 20 January 1990, black right (female) and white left (male) had laid an egg too. It is likely that white left had bred earlier in the season with blue left. (See Figure 2 for pairings and dates of egg laying.)

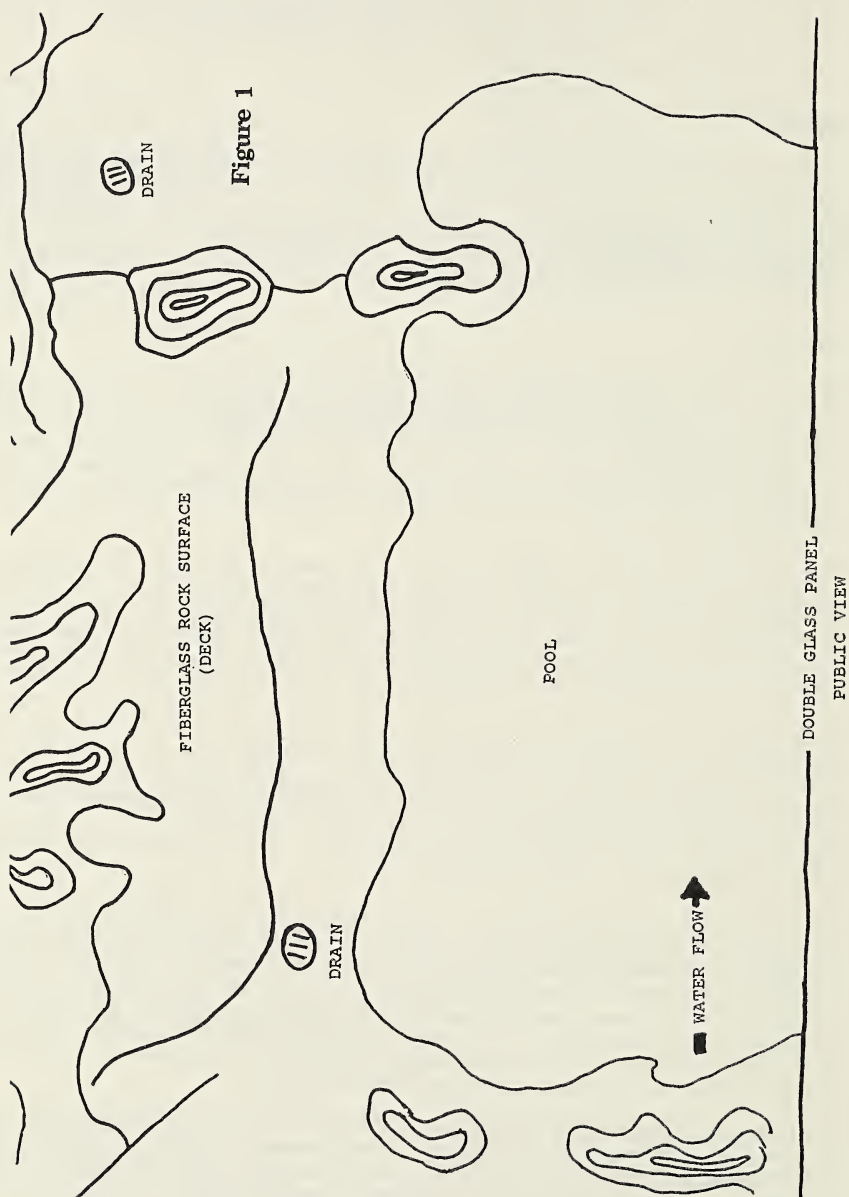


FIGURE 2

Pairing; Date of Egg Laying; Date of Hatch or Pull

	<u>PAIR</u>	<u>EGG LAID</u>	<u>HATCH or PULL</u>	<u>COMMENTS</u>
Sire	White left	11.10.89	12.14.89	Moved to incubator
Dame	Blue left		2.6.90	Fully developed Did not hatch
Sire	Yellow left White right	12.21.89	2.17.90	Infertile
Dame	Green right Orange right	1.8.90 1.12.90*	3.8.90	Infertile
Sire	White left	1.13.90	3.6.90	Hatch
Dame	Blue left			Chick #1
Sire	White left	1.20.90	3.14.90	Hatch
Dame	Black right			Chick #2
1.0	Orange left - unpaired			
0.0.1	Red right - unpaired			

***Only one egg was kept by the pair, the other was discarded and removed by the keeper.**

In order to reduce chances of egg fracture, incubating birds were hand-fed if they began to move around during feeding. This policy became necessary for blue left who didn't have a mate to switch incubation duties with.

During the morning feeding on 6 March 1990, egg shell fragments were noticed near blue left. Further investigation revealed that blue left had hatched her second chick (designated #1) in as many years. During feedings special care had to be taken in order to avoid disturbing blue left. The first feeding I was able to give blue left was in the morning of 7 March 1990. On 14 March 1990 a second chick (designated #2) hatched from white left (male) and black right (female). Previous double hatchings in 1978 and 1983 involved mated pairs for each chick.

Twenty-three days after hatching, Chick #1 was observed wandering close by blue left. It maintained vocal contact throughout its exploration. During the next few days Chick #1's movement continued to increase and blue left began to abandon it during the adult feedings. The chick would respond by running around and trying to get underneath unwilling adults in its search for its mother. On 7 April during the p.m. feeding, Chick #1 was abandoned and ended up hiding under an immature bird, red right. Red right guarded #1 until building closure. The following morning (8 April) #1 was back with blue left. On 12 April blue left was wet and had clean feathers (nesting birds move very little and become dirty with feces), thus indicating abnormal behavior for a brooding female. Chick #1 was with orange left, an unpaired male, who was guarding it. The pair orange right and green right were attacking orange left. Soon the pair white right and yellow left joined in the quarrel. At this point the keeper entered the enclosure which resulted in blue left protecting Chick #1.

Later on after the morning feeding orange right was seen coaxing the chick over from green right. Orange left stayed with #1 until the morning feeding. After the feeding blue left guarded the chick from jealous pair orange right-green right. Over the next few weeks

King Penguin Egg Incubation & Chick Rearing - a group effort *Cont'd*

Chick #1 was observed being fed by green right, blue left, orange right, yellow left, and red right (Brake, 1990) with the exception of blue left, all these birds had not paired or their nesting attempts had failed. Blue left, orange right and green right dominated in feedings and feeding frequencies (Brake, 1990).

King penguin chicks have been observed feeding and rearing chicks other than their own at the Edinburg Zoo (Stevenson, 1984).

The combined care of Chick #1 continued until 30 April 1990 when blue left began to dominate caring for Chick #1. White left and black right successfully raised Chick #2 to about the same size as #1 (2 1/2 ft.). No other adults were seen feeding #1, and #2's parents were not observed feeding Chick #1.

By September, the two chicks were full sized and beginning to molt their natural down. They were primarily fed by their correspondent parents throughout the summer. An occasional feeding, however, by another adult did occur.

Conclusion

The two chicks in the 1989-1990 breeding season were from two females and one male. The single male abandoned one female after the egg was laid and reverted to normal pair behavior to hatch and rear the second chick. The first chick's development was aided by supplemental feeding by keepers of the single female during incubation and guarding and feeding of the chick by single, non-breeding birds and pairs whose own eggs had failed. The single female parent laid two eggs during the nesting season. The first egg was broken and the second egg was laid 34 days later.

Literature Cited

- Brake, David W. King Penguins: A Behavioral Research Project at the St. Louis Zoo. Jouventin, Pierre (19982). Visual and vocal signals in penguins, their evolution and adoptive characters, Verlag Paul Parcey, Berlin and Hamburg, 184 p.
- Michael, Gary H. (1984). Breeding the Rockhopper penguin, *Eudyptes crestatus*, at the St. Louis Zoological Park, Animal Keepers' Forum, Oct. 1984, pp 310-314.
- Mueller-Schwarze Dietland (1984). The behavior of penguins adapted to Ice and Tropics, State University of New York, Albany. p. 193.
- Stevenson, Miranda F. (19984). Penguins in captivity. Avicultural Magazine 89, No. 4:189-201.

Products Cited

Seatab® manufactured by Sea World
Roccal D® manufactured by Upjohn Company

Acknowledgments

The author would like to acknowledge the assistance of Bruce Bohmke, Ross Horton, and Mike LaTurno.



Beached Animal Rescue and Rehabilitation Program

submitted by Pedros Ramos
Animal Care Specialist
Sea World of Florida, Orlando

Sea World of Florida's Animal Care Department is proud to participate in the Beached Animal Rescue and Rehabilitation Program. Under this program, the Animal Care staff goes to different areas of Florida and surrounding states to rescue beached and/or injured cetaceans such as the Bottlenose dolphin (*Tursiops truncatus*), Pygmy and Dwarf sperm whales (*Kogia breviceps* and *K. simus*), and sirenians (namely the West Indian manatee (*Trichechus manatus*)).

Nineteen-ninety-one has been a busy year for us. We rescued several manatees from drainage pipes, power plant intake canals and rivers where the manatees were injured by boat propellers. In addition to this, we also received many orphaned manatee calves, as well as orphaned North American river otter kits (*Lutra canadensis*).

The goal of this program is to release the rehabilitated animals. So far this year we have released five manatees and two Bottlenose dolphins. This program is not only a plus for conservation, but having this program has increased our scientific knowledge with regards to manatee and cetacean biology, habits, and physiology and the care and handling of these debilitated animals.

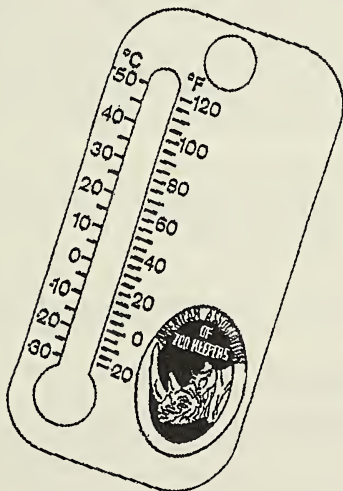


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Remedies for Aberrant Behavior in Zoo Animals

By
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Aberrant behavior in zoo animals will be defined in this paper as any departure from what would be natural and normal behavior in the wild. Some of the more obvious aberrant activities zoo animals develop are stereotyped patterns of movement - such as pacing up and down in fixed patterns, refusing to move at all, and even self-mutilation. Such neurotic forms of behavior have various causes depending on the species, but are found in many animals which are confined to a relatively restricted environment.

The recreational impact of a zoo visitor observing such behavior may be reduced to an uncomfortable feeling of similarity to traditional human prisons (Hediger, 1950).

This paper will discuss a few methods designed to alleviate or prevent aberrant behavior and will be limited to species of animals that may be found in small zoos with a limited budget.

PARROTS (Psittaciformes)

Feather plucking is an unsightly, not uncommon, probably psychic disorder. Birds with this habit are not suitable for display to the public and some with this problem have even been seen to self-mutilate to such a degree as to chew on their own skin and muscle tissue.

The underlying causes are not fully understood but this condition, most common among large parrots, may be brought on by a combination of several factors. These factors include an insufficient opportunity to exercise; continual stress as in an overcrowded aviary or keeping the same species of parrot next to each other; lack or loss of human attention, especially in a hand-raised bird; absence of a sexual partner at the onset of sexual maturity, especially in aviaries kept for breeding purposes; skin disorders that cause itching; improper diet; wrong temperature; low humidity; or lack of bathing opportunity.

The cure for feather plucking should involve methods of trial and error starting with an improved diet and environment such as a large aviary in a new location with more branches for nibbling, a variety of toys and in some cases, increased human contact (Lanternman, 1986).

Why do some birds do this and others do not? The answer is yet to be found, but this extremely exaggerated grooming behavior is not found in the wild. There is no easy cure as the true cause is not really known.

MONKEYS AND APES (Primates)

Probably more research has been done on primates than any other species of zoo animal; perhaps because they are most similar to their captors. Some signs of severe psychological stress in primates include compulsive rocking back and forth, self-mutilation, masturbation and homosexuality, all of which may be seen to some degree in the wild but are exaggerated to detrimental extremes in captivity. This is not what most zoo visitors want their children to see.

The principle of primate contentment, which goes hand in hand with prevention of aberrant behavior, is that variety is the spice of life. "We have to alleviate the awful boredom," Jane Goodall said recently after touring the Ottawa Breeding Centre in Ottawa, Canada.

Remedies for Aberrant Behavior in Zoo Animals, Continued

The following are possible methods of doing just that: Take toys for example - many zoos provide primates with hard rubber balls, but what they really enjoy are toys they can destroy or dismantle. They can be as simple as a piece of wood or a tree branch they can defoliate.

Many monkey houses in zoos have stark plain walls. Painting jungle scenes or even interesting blotches on the walls can provide relief from the sterility of the environment. In addition, Ms. Goodall recommends alternating Musak with Classical recordings or African drum music.

If primates must be kept individually, as is sometimes the case with breeding males, access to a television set showing films in which primates are featured would benefit them psychologically.

Dining differently is what monkeys and apes like, so food should be varied from basic monkey chow to specially flavored monkey chow, muffins, rice, boiled eggs, ripe bananas, apples, raisins, corn on the cob, sunflower seeds and carrots to name a few of the possibilities. Offering food in unusual ways or places and providing deep litter or wood chips where they can hide their food will enable them to establish a sense of territory (Strauss, 1990).

Elaborate and even computerized feeding methods have been quite successful with some primates and have resulted in more active animals. Gibbons (*Hylobates*) were given a mechanized food machine which was initiated when a zoo patron pushed a button giving the gibbon an opportunity to react and receive food when the machine lighted up. Not only did this help the gibbons' behavior, but the public gained more respect for the apes and consequently this also reduced the zoo visitors' face-making and food throwing attempts (Markowitz et al., 1978).

REPTILES AND AMPHIBIANS (Reptilia and Amphibia)

One problem in zoos with reptiles and amphibians is that they often behave in a shy manner and hide under a rock or in the farthest corner out of the visitor's view. A remedy for this is to encourage their natural behavior. With reptiles the creation of a warm basking site in an open area of the exhibit can be used successfully to bring out shy snakes and lizards. This can be accomplished through the use of heat lamps and/or heat cables embedded in the rockwork of the enclosure. These hot spots strategically located in the exhibit in combination with some type of thermal gradient, such as a pond or tree branch, will motivate movement comfort and viewability of the reptiles in the exhibit (Tolson, 1985).

To increase natural behavior and activity in amphibians, live insects can be temporarily trapped in the display area so that they are periodically released for the amphibian to catch. This method of feeding the Poison Arrow Frog (*Dendrobates auratus*) has been very successful at the Santa Fe Teaching Zoo.

MEATEATERS AND BIRDS OF PREY (Carnivora and Falconiformes)

Many zoo predators unable to hunt live food become lethargic and/or overweight. Killing and eating other animals is as natural for raptors and carnivores as is eating grass to a herbivore, but the zoo-going public do not always see it that way. Predator-prey exhibits, however, would be not only educational, but could also alleviate aberrant behavior, boredom and increase activity and alertness in the exhibited animals.

Fish are excellent subjects with which to initiate the public's understanding of the predator-prey relationship (Cheney, 1978). Live fish in an otter pond have been used successfully in some zoos. In one such example, the otters' use of a slide periodically triggered the release of bite-sized fish into their pond (Markowitz, 1982). In another example, the otters were trained to respond to a bell when live fish were released (Friedman, 1985). The results were increased activity and more naturalistic opportunities for the otters.

Remedies for Aberrant Behavior in Zoo Animals, Continued

Live fish prey could also be used with bears, eagles, kingfishers or any other animal that hunts and eats fish. Most butchered mammalian flesh that humans consume bears little resemblance to the intact animal. Fish is the one exception to this rule as it often appears whole in cans or in packages. Therefore, children grow up recognizing that they are eating a "real thing" when it comes to fish (Cheney, 1978). This makes it an acceptable live-prey exhibit for zoos.

Rats or mice could be kept in a mixed species exhibit with raptors to enhance educational and natural behavioral experience, but one might meet with less public acceptance. Chicks or birds in a feline exhibit would certainly activate the cats, but would also probably cause a public outcry! Therefore, the zoo must be more creative. Mechanical prey exhibits have been used with pumas and tigers successfully (Friedman, 1985) but contemporary zoo keepers not usually trained in mechanics were unable to keep the devices functioning for very long. Simpler methods may be the answer. Not only would they be less expensive, but they could be run and maintained by the zoo keeper who feeds the animals daily.

To reduce pacing and inactivity in Servals (*Felis serval*) a project was designed to try and recapture their natural hunting behavioral beauty. Instead of placing their food in a bowl on the floor, pieces of meat were dangled from ropes from the top of the enclosure. The results were dramatic. As the meat was reeled down, the cats immediately perked up, looked twice as tall as they ever had before, and leapt two body lengths straight up to capture their food. They obtained not only food, but also exercise. They became more alert solely from initiating a new feeding procedure (Markowitz/Woodworth, 1978).

Conclusion

Undoubtedly, kindness to captive animals lies in the invention and installation of apparatus that can be used for their work and play (Yerkes, 1925).

The idea of providing a more stimulating environment for animals in captivity is not new. The incorporation of these ideas on a large scale has happened only recently though. Through a greater understanding of animal behavior and an increased demand from the public for more naturalistic zoos, the lives of the zoo inhabitants are improving.

The methods discussed here are just a beginning for what could become not only cures for aberrant behavior, but also increased educational value for the public as well as happier and healthier animals in captivity.

References

- Cheney, C.D. 1978. Predator-Prey Interaction, Behavior of Captive Wild Animals. Nelson-Hall, Chicago, IL. p.1.
- Friedman, S. 1985. Exhibits with Predators, Lecture and Paper presented in Zoo Design Course, N.R. 791. The University of Michigan, Ann Arbor, MI.
- Hediger, J. 1950. Wild Animals in Captivity. Butterworth Scientific Publications, London
- Lanterman, W. 1986. The New Parrot Handbook. Barron's Educational Series, Inc., NY, NY. pp. 47-48.
- Markowitz, H. 1982. Behavioral Enrichment in the Zoo. Van Nostrand Reinhold Co., Inc. NY, NY. pp. 44-45.
- Markowitz, H., Schmidt, M. and Moody, A. 1978. Behavioral Engineering and Animal Health in the Zoo. International Zoo Yearbook. Zoological Society of London.
- Markowitz, H. and Woodworth, G. 1978. Experimental Analysis and Control of Group Behavior of Captive Wild Animals. Nelson-Hall, Chicago, IL. pp. 124-1128.
- Strauss, S. 1990. Happiness Becomes Key to Monkey Business. Toronto Globe and Mail, National News, December 27, 1990.
- Tolson, P. 1985. Reptiles and Amphibians, Lecture and Paper presented in the Zoo Design Course, N.R. 791. The University of Michigan, Ann Arbor, MI.
- Yerkes, R.M. 1925. Almost Human. Jonathan Cope., London.



Tuberculosis in Domestic and Zoo Animals

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The everyday use of antibiotics, and progress towards vaccines for diseases as diverse as AIDS, malaria, meningitis, and even tuberculosis in badgers rather obscures the almost incredible advances in microbiology which have taken place in little over a century. Linking an outbreak of colds with unpacking of a contaminated but otherwise 'clean' parcel of blankets was newsworthy on the Scott 1912 Antarctic expedition. Fleming's discovery of penicillin; the late 1800s pioneering of antiseptic surgery by Lister, and an antimicrobial heat treatment for milk by Pasteur are a few milestones towards greater knowledge.

Consumption, phthisis or tuberculosis was recorded in Hindu literature of 2000 B.C.; and being no respecter of persons, victims of the disease included an Egyptian mummy, as well more recently, of the Brontes, Chopin, F. Kafka, D.H. Lawrence, Napoleon II and R.L. Stevenson. This bacterial, wasting and potentially fatal disease was very widespread formerly, particularly under crowded slum conditions, and according to a recent World Health Organization report, may soon take an increasing toll in Africa linked to a spread of the immunodeficiency disease (HIV-AIDS). Although the bovine strain of TB was the causative organism responsible for patchy outbreaks of meningitis in England in the 1940s, one cannot help wondering whether the present not fully explained patchy occurrence of meningococcal meningitis might not be linked immunologically to the sporadic incidence of TB in cattle.

Probably no animals are completely immune to TB, and a very wide range of species have been recorded with the disease due to *Mycobacteria* related to the leprosy bacterium (*M. avium, bovis, microti, and tuberculosis/leprae*). The 954 mammals and 2112 bird cases reviewed by Francis (19958) and shown in Table 1 are undoubtedly a biased and incomplete sample from autopsies, but nevertheless an interesting indicator of the ubiquitous nature of the disease and its importance in different groups. American Indians and other tribal peoples lack immunity to 'diseases of civilization', but whereas New World non-human primates have notably few cases, Old World monkeys and especially apes are very vulnerable to TB and other communicable respiratory diseases, hence accounting in part for their segregation behind plate glass in many collections nowadays.

The parrots too seem to be particularly prone to TB and may develop warty facial growths, and similarly, long-lived fish may develop skin lesions. Tuberculosis is one of the most important diseases in poultry, and is also a major disease in some waterfowl collections since many of the Arctic and north temperate species seem to lack any natural immunity. Surprisingly, no cases were found amongst 116 penguins examined, but such temperate region birds are susceptible to the fungal respiratory disease Aspergillosis, which may flourish on moldy straw bedding and affect other livestock as well as providing 'farmer's lung'. Hoofed stock are the other main group of particular concern, since many are of economic importance as beasts of burden or in agriculture.

TB became a notifiable disease under the Tuberculosis (Deer) Order 1989, and the Deer Health Scheme was launched with a view to achieving attested herds amongst some 40,000 head in 300 or so deer farms in Britain: mostly red, but circa a quarter being fallow deer. TB had been eradicated from cattle in many countries, but is still a problem in Ireland and certain parts of England and in New Zealand.

Species vary greatly in their natural susceptibility to TB. Species prone to TB include ferrets, pig, primates, rabbit and vole; whereas resistant species comprise the dog, horse,

Tuberculosis in Domestic and Zoo Animals, *Continued*

mice and rats. Genetics plays a part, as seen in some captive rabbit family lines, breeds of mink, and short-faced dog breeds. Overall health can also play a part - TB in horses, for example, is often linked to anemia or other diseases. Similarly, individuals may exhibit varied symptoms following infections ranging from acute disease with a spread of tuberculosis lesions in organs away from the primary infection site to species such as rats and mice which fail to develop tuberculosis at all (although rats can also transmit bacilli physically by ingestion and defecation without necessarily becoming fully tuberculous themselves).

Clearly the pathological course of the disease affects the potential for disease transmission, and whereas, for example, in badgers and man lesions may become encapsulated and the disease quiescent unless remission occurs perhaps under stress, lesions in cattle tend to remain open increasing the risk of cross infection. TB bacilli may be passed on especially via either the respiratory or alimentary routes: bronchial pus-sputum-saliva aerosols may be a crucial factor in young cattle or sheep if over-wintered indoors/ or ingested whilst grazing off tuberculosis-urine-feces contaminated pasture; or from non-pasturized milk, the probably route of infection of cats and hedgehogs before the war.

Uncooked offal has been a source of infection in ferrets, and mink and silver fox farms. The first tuberculosis positive wild badger in Switzerland in the '50s was believed to have eaten infected roe deer carrion, but badgers in Britain probably acquired TB from cattle; often foraging for worms or Dor beetles on pasture, with the first wild case in 1971, and zoo cases in the '30s and a Whipsnade case ending up surprisingly at the Royal Scottish Museum, Edinburgh (Hancox, 1980)! Bite wounds have been a lesser infection pathway in badgers and voles for example, whilst congenital prenatal infection also occurs occasionally in cattle.

A great deal remains to be discovered concerning TB transmission and epidemiology however, with vital implications for health in animal husbandry. Pigs are very susceptible to avian TB, and since infection can persist for up to 4 years in the soil, they are at risk from chicken manure fertilizer spread on pasture (as are cattle), pigs being at risk also from feeding troughs shared with rooks, starlings and sparrows. The bovine strain TB bacillus may survive for only a month or so exposed on fields even in winter, but although rabbits are very susceptible to it in captivity, and live in crowded colonies grazing on presumably infected pasture, there has strangely been only one wild case reported from New Zealand (Wildlife Link, 1984).

Even under experimental conditions, cross-infection from tuberculous to healthy stock is not guaranteed however, taking some 6 months as regards rabbits, from badger to calves, cattle to cattle, and had not occurred after 1 year in one M.A.F.F. red deer herd. Although cattle (and other ungulates) are especially susceptible to the bovine strain via the respiratory route, or nose-nose 'contacts', cattle may acquire avian TB from pheasants or via woodpigeons sharing water troughs (Francis, 1958), or at waterholes shared in arid areas; with other cattle herds in Australia, or with kudu in South Africa. The difficulty of eradicating TB in cattle with the continued presence of wild reservoirs of the disease is undergoing further study both as regards opossums in New Zealand, and badgers in Ireland and English southwest problem areas, where paradoxically the disease is renal in badgers but respiratory in cattle.

The pathology of the disease would also repay further study, since in long-lived animals TB may affect the bones and joints, and could be a source of insights into arthritic complaints. Tubercular bone disease occurs in animals as diverse as dogs, horses, lion, man, pig, rabbit and rodents, and perhaps badgers as well, which display osteomyelitis (Hancox, 1980), and are also prone to arthritis, as recorded for example in captivity at Melbourne Zoo.

Tuberculosis in Domestic and Zoo Animals, *Continued*

Bibliography

- Dunnet, G.M. et al., 1986. Badgers and bovine tuberculosis. HMSO. London.
- Francis, J. 1958. Tuberculosis in animals and man. Cassell. London.
- Hancox, M. 1980. Parasites and infectious diseases of the Eurasian badger. Mammal Review 10-151.
- Howard, R.W. 1981. Badgers without bias. Abson Books, Avon Wildlife Trust.
- Meyer, R. 1986. The fate of the badger. Batsford. London.
- Wildlife Link Badger Working Group. 1984. Badgers, cattle and bovine tuberculosis. W.W.F. UK.

TABLE 1 - Range of species recorded as having tuberculosis [with numbers of cases]. (Francis, 1958)

Marsupials - 17 kangaroo, rat kangaroo, wallaby, Phalangerid opossum (*Trichosurus vulpecula*)

Insectivora - 1 hedgehog, mole, shrew (Sorex)

Chiroptera - 2 Flying fox fruit bat

Primates - 733 - Common marmoset and New World monkeys 29; lemurids 34; Cercopithecids including baboon (Guinea and Hamadryas), macaque (Barbary, crab-eating, Javan, rhesus, toque), patas, vervet 646; Pongids concolor gibbon, chimp, gorilla, man 25.

Lagomorpha - brown hare, rabbit

Rodentia - 12 Hystricomorphs: agouti, capybara, guinea pig, porcupine (Hystrix); Myomorphs: Apodemus, beaver, brown rat, Clethrionomys, hamster (golden & striped), mice, Microtus; Sciurormorph: ground squirrel.

Carnivora - 65, 6 or 7 living families: dog, fox, silver fox; cat, cheetah, jaguar, lion; Eurasian badger, ferret, mink; coati; bear; mongoose.

Pinnipedia - 1 seal

Proboscidea - 12 African and Asian elephant

Perissodactyla - 15 ass, horse, mule, zebra; rhino; tapir

Artiodactyla - 94 Bovids including American and water buffalo (Bison, Bubalus), cattle. Cape duiker, goat, kudu, sheep; Deer including elk, fallow, moose, mule, red, roe, sika; Arabian camel; giraffe; pig and wild pig.

Total Mammal cases in study - 954

Sphenisciformes - 0 despite 116 examined

Struthioniformes/Casuariformes - 7 emu, ostrich

Pelecaniformes/Ciconiiformes - 6/21

Anseriformes - 75 including ducks (common scoter), geese, swans (*Cygnus colombianus*)

Falconiformes - 47 African eagle, kestrel

Tuberculosis in Domestic and Zoo Animals, Continued

Galliformes - 290 black grouse, capercaillie, fowl, partridge, peacock, pheasant, turkey

Gruiformes - 28

Charadriiformes - 3 golden plover, gull (several species), lapwing

Columbiformes - 1181 pigeon, wood pigeon

Psittaciformes - 409 eclectus lory

Cuculiformes - 4

Strigiformes - 8 pygmy owl

Coraciiformes - 2

Passeriformes - 38 canary, sparrow; American and European crow, jackdaw, rook, jay, starling, thrush

Total Avian cases in study - 2112

Reptiles - caiman; terrapin (*Trionyx*); snakes including Coluber grass snake, puff adder, African python, rattlesnake (*Crotalus*)

Amphibians - frogs (*Leptodactylus*), toad

Fish - carp and halibut



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ZOOKEEPER...requires high school diploma or G.E.D. certificate plus two years of experience in the care and feeding of a variety of animals within the last five years. Additional appropriate education may be substituted for the minimum experience requirement. Elephant or bird care/handling is desirable. Applicants possessing the highest qualifications will be invited to further examination. A transcript is required if you wish to be qualified on the basis of course work. Possession of a valid Colorado class "C" driver's license is necessary by completion of probationary period. Salary \$18,420.00 to \$26,868.00. Please send resume to: Jayne Lujan, Career Service Authority, 110 16th St., Denver, CO 80202 by **8 November 1991**.

AVICULTURAL BREEDING & RESEARCH CENTER... has positions open. Aviary Keeper - Cleaning, feeding and caring for Cockatoos, Macaws, Amazons, and a small variety of softbills and Hornbills. Responsibilities include maintenance of aviaries and an understanding of the birds and a careful study of their eating habits with the ability to discern problems through not eating, fecal changes and physical look. Send info (personal resume, background experience) to: E. Trent Swigert, Curator of Birds, 1471 Folsom Road, Loxahatchee, FL 33470 (Palm Beach area) or phone (407) 793-5135.

The following two (2) positions are open at the Primate Foundation of Arizona. All applicants must have a negative T.B. skin test, negative hepatitis B surface antigen test, and evidence of a measles booster or natural disease prior to employment. Equal Opportunity Employer. Excellent benefits. Send letter of interest (with requested salary), resume, and three letters of reference to: Jo Fritz, Director, Primate Foundation of Arizona, P.O. Box 86, Tempe, AZ 85280.

ASSISTANT COLONY MANAGER...works directly under Colony Director. Supervises and works with caregivers in maintaining and caring for approximately 82 chimpanzees (*Pan troglodytes*). Requires chimpanzee experience and ability to work well with others. Some computer experience is desirable. Must be willing to sign a three-year contract. Salary negotiable. Position open until filled.

CHIMPANZEE CAREGIVER...a new position has been made available. Requires BA/BS in Zoology, Biology, Anthropology or related fields of study and ability to work well with peers. Primate or zoo experience preferred. Assist in the responsibility for maintaining and caring for approximately 82 chimpanzees. Must be willing to sign a two-year contract. Salary negotiable. Position open until filled.

MAMMAL KEEPER...care, maintenance of exotic and endangered mammals. Requires past experience with mammals. Requires degree, college level courses in biology, zoology and animal sciences, or equal experience. Ability to apply self. Enthusiasm for all aspects of job including development of new habitats. Future Curator position. Starting Salary: \$14,000.00, excellent long-term potential. Send resume to: Washington Zoological Park, 19525 SE 54th, Issaquah, WA 98027. **Closing date 30 November 1991.**



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INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 6" x 10" (15cm x 25 1/2cm). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Black and white photos only accepted.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31. FAX # is 913-272-2539.

DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

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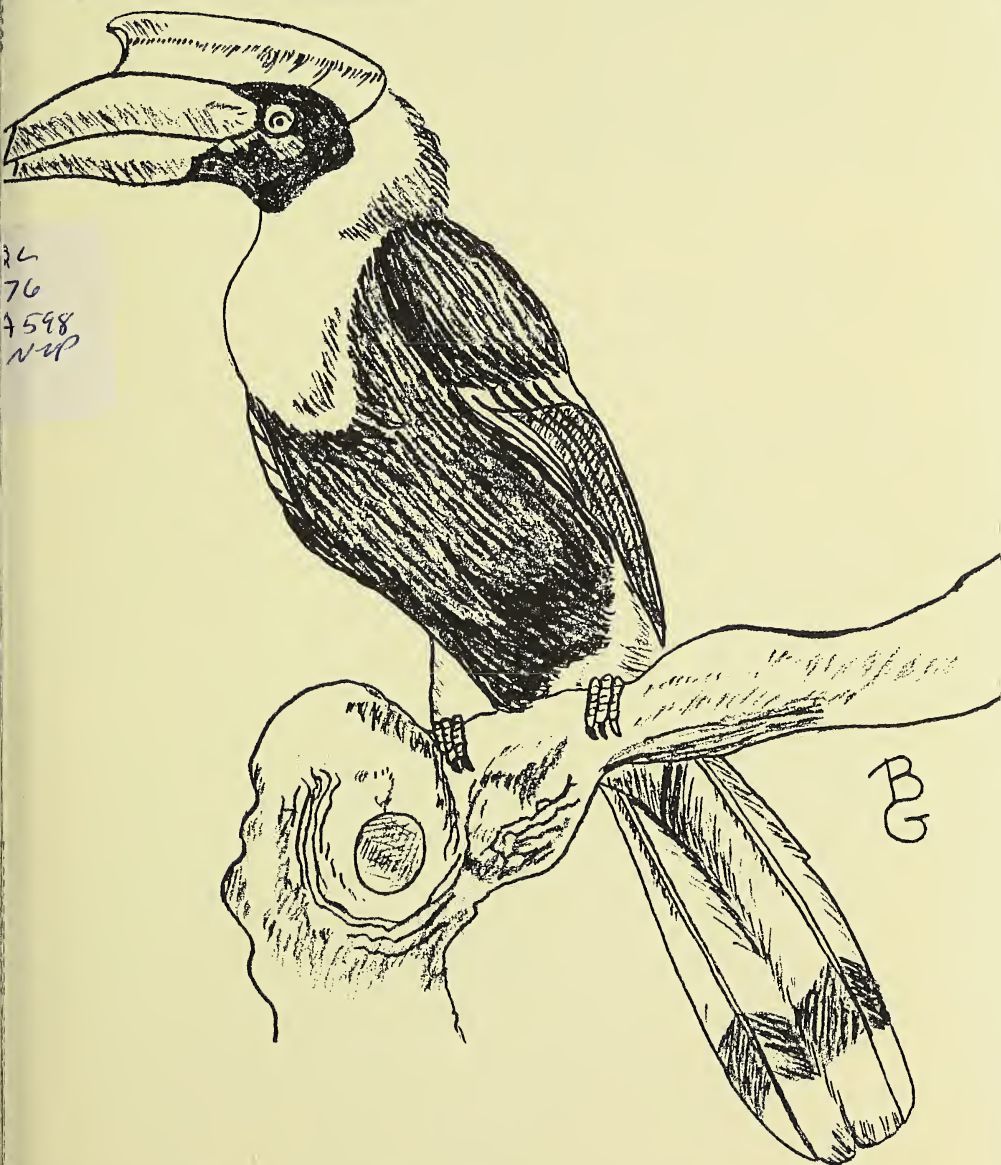


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Animal Keepers' Forum

November 1991



Dedicated to Professional Animal Care

ANIMAL KEEPERS' FORUM, 635 Gage Blvd., Topeka, KS 66606

Editor-in-Chief: Susan Chan

Associate Editors: Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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This month's cover features the Great Indian Hornbill (Buceros bicornis) drawn by Betty Grogan, a bird keeper at the Jacksonville Zoo, Jacksonville, FL. This member of the hornbill family inhabits the jungles of India and Burma where it lives on a diet of fruits and insects. Typical of this family, the female nests in large tree hollows and is sealed in by the male during the incubation period. During incubation and until the chicks are ready to fledge, the female is solely dependent on the male to bring her food. The chicks are born naked. Thanks, Betty!

Scoops

and

Scuttlebutt

Second Gorilla Workshop Announced

The Second Gorilla Workshop will be held in Milwaukee, WI from 12-15 June 1992. Co-sponsored by the Milwaukee County Zoo and the Zoological Society of Milwaukee County, the workshop will be held at the Hyatt Regency Milwaukee. Topics for discussion and presentation include: behavior, husbandry, research techniques, behavioral enrichment, management, diet, veterinary, exhibit design, education and tourism. The workshop will include a tour of the new gorilla and bonobo facilities which will be open in the spring of 1992. For information regarding registration and paper/poster presentations, contact: Jan Rafert, Curator of Primates & Small Mammals, Milwaukee County Zoo, 10001 W. Bluemound Road, Milwaukee, WI 53226 (414) 771-3040.

Rhino Capture/Giraffe Relocation Tape Available

Andy Lodge, Founder and President of the Ngare Sergoi Support Group, Inc. is making available to interested AAZK Chapters or individual members a videotape showing some of the work being done at both the Ngare Sergoi Rhino Sanctuary and the Ngare Ndare Forest Reserve. Included on the tape is footage of the giraffe relocation program, the building of the solar fence at Ngare Ndare and the first release of a sanctuary rhino into the wild. Cost per tape is \$6.00 and may be purchased by contacting Andy at N.S.S.G., Inc., P.O. Box 29503, Columbus, OH 43229. Make checks payable to Ngare Sergoi Support Group. Slides showing the airplane and truck purchased with 'Bowling for Rhino' funds and sporting the AAZK Rhino logo are available to Chapters free of charge by contacting Andy.

New ABWAK Publication Now Available

At the Toledo Conference, Nigel Platt, International Affairs Coordinator for the Association of British Wild Animal Keepers (ABWAK) announced that this association is offering a publication entitled "Management Guidelines for Exotic Cats" (154 pp, paperback) to the AAZK membership. Anyone interested in obtaining this publication is asked to contact: John Partridge c/o Bristol Zoo, Clifton, Bristol, BS8 1UQ, England. Cost is £9.95 plus £3.25 postage. Check with the international desk at your local bank for British pound sterling equivalents in U.S. or Canadian dollars.

Invitation to Experience the 'Real' Jungle at Cano Palma Biological Station

Cano Palma Biological Station was founded by two Canadian zoo keepers as a center for research, conservation and education on the northeastern Atlantic coast of Costa Rica in a biological corridor of lowland tropical rainforest. Here is an opportunity for you to experience first-hand the wonderful diversity of life in the rainforest. Hear the roar of a jaguar; wake up to the call of the howler monkey; watch the Disney-like morpho butterflies; witness the mystery of nesting sea turtles. We want to share these wonderful experiences with our fellow keepers and invite you to visit. For more information, please contact: Marilyn Cole, Box 335, Pickering, Ontario L1V 2R6, Canada.



Note from the Editor...

Upon returning from Toledo and the 17th National AAZK Conference, I found myself again facing another deadline for Animal Keepers' Forum. Due to the short period of time between the end of the Conference and the time this issue had to be at the printers, we have not been able to include much information about the events in Toledo. We will plan to run an overview of the Board of Directors meetings and the General Membership meeting in the November issue of AKF. At that time we also hope to have some closing thoughts from the Conference Committee as well as complete information on how to order a copy of the 1991 Conference Proceedings. We had hoped to be able to include information on ordering the proceedings in this issue, but since all papers presented have not as yet been turned in for publication, we were not able to accurately determine prices for the proceedings. Also, we wanted to be able to list all the papers which will be included when the proceedings are published and obviously cannot do this until we have them safely in hand.

Plan to look for an order form for the 1991 Conference Proceedings in the November and December issues of AKF.

I would like to mention that a number of suggestions concerning AKF were brought forward during the week of the Conference and we will be attempting to incorporate many of these ideas into the journal in 1992. We thank all those individuals who made constructive and creative suggestions for improving AAZK's publication.

Congratulations for a job well done to all those involved in putting on the 1991 AAZK National Conference! From initial figures it looks as though the Toledo Conference drew about 200 delegates from approximately 79 facilities representing 37 States, the Canadian Provinces of Ontario and Manitoba as well as England, Australia and Africa.

.....S.C.



Births & Hatchings



West Edmonton Mall...the Marine Life Department reports the hatching of two Black-footed or jackass penguins (*Spheniscus demersus*). The first chick hatched on 23 August and the second on 25 August. Both chicks are doing well. submitted by Michele Kuberski, Keeper/Aquarist, West Edmonton Mall, Edmonton, Alberta, Canada.

Little Rock Zoo...the first egg ever produced by the Little Rock Zoo's thirteen Chilean flamingos (*Phoenicopterus chilensis*) hatched on 1 September. The chick continues to thrive. Bird/Nursery Keeper Kelli Westbrook said the size of the flock helps determine whether Chilean flamingos produce chicks. As far as we know, this is the smallest flock to do so without the aid of mirrors.

Other births since September include: 0.0.2 King's Island wallabies (*Macropus rufogriseus*); 1.0 Scimitar oryx (*Oryx dammah*); and 0.0.1 Black and white colobus (*Colobus guereza kikuyuensis*). submitted by Joyce Ford, Chapter President, Little Rock Zoo AAZK Chapter, Little Rock, AR.



Coming Events

Understanding Chimpanzees: Diversity and Survival

December 11-15, 1991

Chicago, IL

Organized by Jane Goodall, the conference will take a comparative approach to understanding the behavior of chimpanzees and bonobos; documenting behaviors and behavioral variability, investigating hypotheses that explain variations, and exploring comparative methodology. Held at the Chicago Academy of Sciences, the symposium will explore the use of video for documentation and comparison. The conference will survey the population status of chimps and bonobos, the threats to their habitat, and the development of sanctuaries. It will pursue an agenda for conservation in the wild and in captivity. To receive a preliminary program and registration information, contact: Linda Marquardt, The Chicago Academy of Sciences, 2001 N. Clark St., Chicago, IL 60614 (312) 943-6969. If you are unable to attend, but are interested in obtaining a copy of the proceedings, please contact Carolyn Bresler at (312) 649-2062, ext. 2062.

The Ninth Dr. Scholl Conference on the Nutrition of Captive Animals

December 13-14, 1991

Chicago, IL

Co-sponsored by the Lincoln Park Zoological Society and the Chicago Park District, the conference will be held at the Lincoln Park Zoological Gardens. There will be general sessions on **Captive Animal Nutrition** and a special session on **Avian Nutrition**. For registration information, contact: Lois Stanley, Lincoln Park Zoo, 2200 N. Cannon Dr., Chicago, IL 60614, (312) 294-4666.

AAZPA Schools for Professional Management Development for Zoo & Aquarium Personnel and Applied Zoo & Aquarium Biology

February 2-6, 1992

Wheeling, WV

Will be held at Oglebay Park. For further information, contact: AAZPA, Oglebay Park, Wheeling, WV 26003-1698. (304) 242-2160.

1992 AAZPA Regional Conferences

Northeastern Regional - March 15-17, 1992. For more information contact: Bob Jenkins, National Aquarium in Baltimore, Pier 3, 501 E. Pratt St., Baltimore, MD 21202 (301) 659-4233.

Western Regional - March 29-31, 1992. For more information contact: Mike Flint, Reid Park Zoo, 1100 South Randolph Way, Tucson, AZ 85716 (602) 791-3204.

Southern Regional - April 12-14, 1992. For more information contact: Randy Rockwell, Jacksonville Zoological Park, 8605 Zoo Road, Jacksonville, FL 32218 (904) 757-4463.

Central Regional - April 26-28, 1992. For more information contact: Dawn McDonough, Dallas Zoo, 621 E. Clarendon Dr., Dallas, TX 75203 (214) 670-6825.

Great Lakes Regional - May 3-5, 1992. For more information contact: Ann Silveri or Andy Odum, Toledo Zoological Gardens, P.O. Box 4010, Powell, OH 43609 (419) 385-5721.



Announcing a New Service to the Zoo Community: AAZK Reference Search

A computerized database has been established to provide information on where to obtain sources of literature on specific topics of interest to zoo personnel. This reference service will provide you with as complete a search as possible, and we are continuing to add to the database on an ongoing basis. This service is provided by the American Association of Zoo Keepers, Inc. (AAZK) as part of their Keeper Training and Education Committee, and is available to anyone in the zoo community for a nominal fee of 25 cents per page of print-out. The minimum charge is \$2.00 and you will be billed once the order has been placed. If you are interested in taking advantage of this new service, fill out the form below and return to the address given.

Request for Bibliographic Information

The purpose of this project is to provide keepers and other zoo personnel with sources of literature on particular topics of interest. You will be provided with individual references as well as sources of bibliographies telling you where to get them. Please PRINT or TYPE form below.

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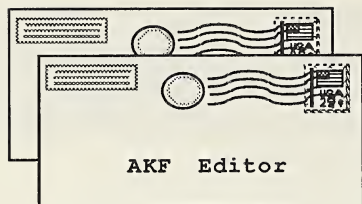
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Letters to the Editor

Dear Editor:

I would like to comment on David E. Ackerman's article entitled, "A Study of the Colobus Monkey (*Colobus guereza kikuyuensis*)" (*Animal Keepers' Forum*, Vol. 18, No. 4, 1991, pp. 164-171). In this article the author arrived at the conclusion that sex in the subspecies *Colobus guereza kikuyuensis* could be determined by tail patterns. I would like to comment on that conclusion.

In 1987, I was given the approval of the WCMC of the AAZPA to develop the North American Regional *Colobus* Studbook. Publication of this studbook is awaiting the positive identification of the subspecies of the founding individuals of the captive population. At the AAZK National Conference in New Orleans last year I presented a paper entitled, "The Captive Population of the Black and White Colobus, *Colobus guereza*". In this paper I outlined the problems associated with identification of the various subspecies of *C. guereza* in North American collections. I explained that subspecies of *C. guereza* can be identified by tail and mantle patterns; individual variation within a subspecies being minimal. Hybridization of these subspecies in captivity has made identification difficult. Currently my main focus is a genetic analysis of these subspecies. It is hoped that this analysis will provide a means by which to positively identify the subspecies. Once the subspecies can be identified, a decision will be made by the Old World Monkey Taxon Advisory Group in regards to their management. Until a solution to this dilemma can be reached, I have asked managers of captive *Colobus* to match the tails of their breeding pairs in order to reduce the numbers of hybrids in the population. In summary, tail and mantle patterns in *Colobus guereza* cannot be used in the determination of sex, but can be used in the identification of subspecies.

For additional information regarding the identification of subspecies of *Colobus guereza*, I have included a list of selected references.

Cathi Lehn

Colobus Studbook Keeper

COLOBUS TAXONOMY (Selected References)

- Dandelot, P. 1974. Part 3 Order Primates, Main Text. In The Mammals of Africa, An Identification Manual, ed. J. Meester and H.W. Setzer. Smithsonian Institution Press: City of Washington.
- Dorst, J. and Dandelot, P. 1970. A Field Guide to the Larger Mammals of Africa. London: Collins.
- Haltenorth, T. and Diller, H. Translated by Robert W. Hayman. 1984. A Field Guide to the Mammals of Africa including Madagascar. London: Collins.
- Kingdon, J. 1971. East African Mammals. Vol. 1. London and New York: Academic Press.
- Napier, J.R. and Napier, P.H. 19967. A Handbook of Living Primates. London and New York: Academic Press.
- Napier, P.H. 1985. Catalogue of Primates in the British Museum (Natural History) and Elsewhere in the British Isles. Oxford: University Press.
- Rahm, U.H. 1970. Ecology, zoogeography, and systematics of some African forest monkeys. In Old World Monkeys, ed. J.R. Napier and P.H. Napier, pp. 589-626. London and New York: Academic Press.

Dear Editor:

I would like to thank Cathi Lehn for responding to my colobus article. When I began to study colobus in 1986, we received a male that was thought to be the same subspecies as our females. In 1989, when looking over the results of my study, I noticed the difference in neonatal tail colorings and the difference in the rate of the oat color maturation. Neither observation could be found in any literature and the loss of offspring and colobus moving out of my section did not allow scientific sampling.

Upon completing the article for review, the possibility that we did have two subspecies came up. Since the colobus studbook will not be completed until 1992, I submitted my article. It is unfortunate that Lehn did not agree with one of my conclusions, which now appears to have been made in error, but that does not negate the rest of the article.

This article was written from a husbandry/observational point of view and not from one of scientific research. The intent of husbandry articles like this one is to pass on methods and/or observations of collections to other keepers. I appreciate the scientific/research input from Cathi, but I believe the Forum is primarily for keepers and by keepers to share information, both scientific and unscientific. Such topics as husbandry, education, exhibit design, thoughts, ideas, views, humor, etc. should be the main focus of the journal, in short, a medium in which everyone can contribute and can benefit.

David Ackerman, Keeper
Columbus Zoo, Columbus, OH

Editor's note: The editorial staff of AKE regrets if there has been any misunderstanding or confusion from the information/opinions expressed in Mr. Ackerman's article. It should be noted that the author did state in his article that his conclusions were drawn only from observations on his institution's group of Colobus and that he was not advocating a blanket statement of fact for any other groups in regards to sex determination by tail patterns. AKE sincerely appreciates Ms. Lehn's clarification of and opinion on this issue and hopes that all those involved in the captive care of Colobus will feel free to seek out advice from Ms. Lehn in her role as Colobus Studbook Keeper.

As part of our continuing process to improve AKE and make it a more professional publication, the editorial staff with the approval of the the AAZK Board of Directors is taking the steps necessary to put in place a review process for technical and research articles submitted for publication. Potential reviewers are currently being contacted and we hope to have the process in place by the first of the year. Further information on how the process will work will be published when details and the review panel members are finalized.
S.C.



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the Dutch / Belgian Foundation for Zoo Personnel

By
Frits Hoeksma and Koen Brouwer
National Foundation for Research in Zoological Gardens
Amsterdam, The Netherlands

Almost ten years ago, in the spring of 1980 at the Wassenaar Zoo in the Netherlands, four keepers published their first journal for zoo keepers, "De Harpij", the Dutch word for Harpy eagle *Harpia parpy ja*. The response to this unique (by Dutch standards) publication was rather mixed. Keepers were enthusiastic, but the directors of the zoos were rather skeptical about this new development. Nevertheless, the editors continued publishing their journal which appeared four times a year. The editorial board increased to seven people, and contacts with other zoo keeper organizations were initiated. Exchanging journals with the AAZK (for *Animal Keepers' Forum*) and ABWAK (for *Ratel*) resulted in translated articles for "De Harpij". Furthermore we were determined to start up an organization for zoo keepers in Holland.

Frits Hoeksma traveled to Toronto in 1982 with Peter Lindeboom, then also one of the editors, to attend the National Conference of the AAZK and to gather ideas to aid us in this endeavor. We were impressed about the professionalism of these people who took their work as seriously as we did. After we returned to Holland, we and the other editors enthusiastically began to set up a plan for an organization for zoo keepers. But a new problem developed; the Wassenaar Zoo, where almost all editors were working, was on the verge of closing. The motivation was dampened and between 1983 and 1984 only one edition of "De Harpij" came from the press. It was very difficult with only the two of us left as the editorial board of "De Harpij", but we survived!

In 1985 a new editor, Chris Peters of Rotterdam Zoo, joined us. Chris' contribution, coupled with a more positive attitude on the part of the zoo directors, put us back on track. Again in 1986, but this time with Hans-Peter Flierman and Ellen van Kerpel, Frits attended AAZK's National Zoo Keepers Conference in Miami. The Dutch contribution to the meeting consisted of a paper on the breeding and husbandry of the Malayan giant squirrel (*Ratufa bicolor*) at the Wassenaar Zoo in Holland.

Following our return to Holland we heard that the Wassenaar Zoo would definitely be closed. Four issues of the Harpij were produced in 1986 - these were smaller than before, now being comparable in size to *Ratel* and *Animal Keepers' Forum*. The number of subscribers had grown to 225. We had one or two contact persons in almost every zoo who distributed the journal within their park. The keepers at the Antwerp Zoo in Belgium were also interested in our magazine and we established a contact person there.

In 1987 we surprised the Dutch and Belgium zoo-world with our "expensive-looking color cover". This was a gift from a printing business in Holland. We also received some donations from companies, and with this money we organized a one-day conference for the Dutch and Belgian zoo keepers on 22 May 1988. This was a big success; almost a hundred keepers from the Netherlands and Belgium attended this one-day meeting. The late Jean Hromadka, well-known by AAZK members, was in the vicinity and attended the one-day conference. She told us after the meeting that there was no great difference between our meeting and AAZK conferences in the U.S. which we took as a great compliment!

During this one-day conference Foundation "De Harpij", an organization for zoo personnel in the Netherlands and Belgium, was officially established. This organization

De Harpij - the Dutch/Belgium Foundation for Zoo Personnel, Cont'd

is for all zoo personnel, not only zoo keepers, because we believe that it is important to include everyone together in one organization to get the best result. A board of advisors consisting of various Dutch and Belgium zoo specialists, such as a director, veterinarian, a curator and an educational specialist, was also established in 1988. Once a year the board of directors of De Harpij meet with this advisory panel to discuss new developments in the zoo world relevant to our organization, as well as other zoo-related issues. Our relationship with the management of the Dutch zoos has improved significantly over the years. This is, amongst others, expressed by the fact that we now also have a yearly meeting with the board of directors of the Dutch Zoo Federation to review strategies and ways to cooperate.

Our second annual conference was held at Amsterdam Zoo and some 130 zoo people attended this meeting. We were proud to also have an international speaker: David Clarke, invertebrate specialist and keeper at the London Zoo.

Other major developments in 1989 included the initiation of a Dutch/Belgium Keepers' Accommodation List. Once again AAZK was our source of inspiration. We also provided a group of German zoo keepers with advice regarding an organization for German-speaking zoo personnel. In the meantime they have started their first activity: publication of a bi-annual journal entitled "Arbeitsplatz Zoo".

We celebrated our tenth anniversary with a conference organized by our Rotterdam Zoo chapter. Theme of this well organized meeting was "Zoos' direction/towards 2000". Papers were presented on the evolution of various disciplines in zoos, such as veterinary care, animal keeping, research and architecture. The proceedings of this conference were published in our first - and thickest - issue of 1991. This publication was financially supported by the Emmen Zoo which, along with all the other major Dutch and Belgium zoos, have been very supportive over the past years.

Quite recently the Dutch Zoo Federation and "De Harpij" organized a workshop for personnel involved in elephant management in Dutch and Belgium zoos. This meeting was hosted by Amersfoort Zoo and proved to be most successful. Some 50 keepers, veterinarians, curators and directors participated in the various workshop segments, covering topics such as the role of keepers in research, reproduction and breeding programs.

We are currently studying possibilities to improve communication among European zoo staff and with our colleagues in other parts of the world. It is our strong conviction that it is very important that people working with animals in a zoo realize that they are part of one large team. Only if we work closely together, on a regional, national and global scale, will we be able to make a significant contribution towards the conservation of our planet.



TBS to Air "Mysterious Elephants of the Congo" in November World of Audubon Special

Sunday, 24 November 24 at 10:00 p.m. (EST), American television viewers will get a rare look at the mysterious forest elephant of Central Africa. TBS' WORLD OF AUDUBON series presents "Mysterious Elephants of the Congo", a one-hour program on the plight of the forest elephant. The program will also include rare footage of some of Africa's unusual forest wildlife such as the forest buffalo, the giant forest hog, the bongo and the sitatunga. Also included will be an examination of the ivory trade in the U.S., Asia and abroad. Interviews with ivory dealers and a look at the impact of forest destruction on the indigenous pygmy people will also be included.

The forest elephant, a subspecies, is highly prized for the quality of its ivory, and like its cousin, the savanna elephant, its numbers have been decimated by international poaching syndicates. Scientists estimate that there are roughly 609,000 elephants left on the African continent. It is believed that at least one-third of these are forest elephants.

Mysterious Elephants of the Congo, Continued

Because of its dense habitat, very little is known about the forest elephant. Generally, these forest-dwellers are smaller than their cousins on the savanna, have smaller ears and have thinner and straighter tusks. Their smaller size helps them move easily through their heavily overgrown habitat and create a network of trails crisscrossing the forest.

Recently scientists have begun to spend more time studying the elusive forest elephant and its relationship to the tropical forest environment. During January and February of this year, filmmakers spent a month with elephant researchers in the Central African Republic. It is in this country, roughly the size of Texas, that scientists began one of the first forest elephant census and helped establish a forest elephant reserve, which may soon be duplicated in neighboring Cameroon and Congo.

During their month-long stay, the filmmakers examined many of the threats to forest elephants, including poaching for both ivory and meat, excessive logging and road-building, and the widespread poverty that makes wildlife conservation such a low priority in many countries of Africa.

On 18 January 1990, a worldwide ban on ivory trading went into effect. The ban is only temporary, however. Next March, the future of the ivory trade will be decided when the signatory parties of the Convention on International Trade in Endangered Species (CITES) meet in Japan. CITES delegates will decide whether to continue the 1990 ivory trade moratorium or to allow trading to resume with the southern African ivory cartel. If trading is allowed to resume, the central African forest elephant may not survive.

Encore presentations of this program will be shown as follows (consult your local listings for times in your area):

Monday, 25 November 12:05 A.M. (EST)
Saturday, 30 November 11:05 A.M. (EST)
Monday, 2 December 2:05 A.M. (EST)



AAZK Announces New Professional/Contributing Members

Catherine Ellis, Mystic Marineline Aquarium (CT)	Shelia Morris, Reston Pet Farm (VA)
Joe Duncan, no zoo listed (VA)	Alan Sharples, Zoo Atlanta (GA)
Robin Brockett, Zoo Atlanta (GA)	Kathi Deal, Chehaw Animal Prk. (GA)
Bernice Bartosch-Bialik, Cen. Fl. Zool. Prk. (FL)	Maria McManus, Indianapolis Zoo (IN)
Michael Merrick, Tautphaus Prk. Zoo (ID)	Chris Kishiyama, Tautphaus Prk. Zoo (ID)
Mary Jo Hunsicker, San Diego WAP (CA)	Lisa Defino, San Diego WAP (CA)
Lorie Thuesen, The Living Desert (CA)	

Renewing Contributing Members

Florence Bramley, The Graphics Group, Staten Island, NY
Richard J. Zimmerman, Gettysburgh Game Farm, Fairfield, PA
Bruce M. Thomas, Takoma Park, MD
Steve H. Taylor, Director, Cleveland Metroparks Zoo, Cleveland, OH
Wilam Disher, Volunteer Observer, San Diego Zoo and SDWAP, San Diego, CA
WLA Landscape Architecture & Planning, Citrus Heights, CA
Tim Knight, Research Associate, Woodland Park Zoological Gardens, Seattle, WA



Mudskippers

By
Nancy K. Porter
Burnet Park Zoo
Syracuse, NY

Mudskippers are amphibious, euryhaline fish of the Gobiidae family. They are found in areas ranging from the mouths of rivers and streams flowing into bodies of saltwater to drainage ditches, mudflats, mangrove swamps and inter-tidal areas of the Old World tropics.

The waters in the areas they occupy show a diversity of salinities and any one area may experience great fluctuations in salinity. Gordon (1985) states, "Salinity variations occur both spacially (small fresh or brackish-water streams often cross the mudflats) and temporally (short-period rapid changes between dry and rainy seasons)." Also Gordon (1968) says of one species, *P. sobrinus*, "...their euryhalinity and osmotic regulatory abilities ensure that they can make use of virtually any natural source of water they may encounter." Two species (*P. dipus* and *P. weberi*) are reported to regularly migrate to fresh water (Mancini, 1991).

Mudskippers are semi-terrestrial, hauling themselves out on unsubmerged objects and land for extended periods of time. Movement out of the water is accomplished by use of their muscular pectoral fins which propel them upward. They can move forward by pushing with their caudal fins. During flight from danger some species may jump or skip several inches to a few feet in height and distance.

Materials and Methods

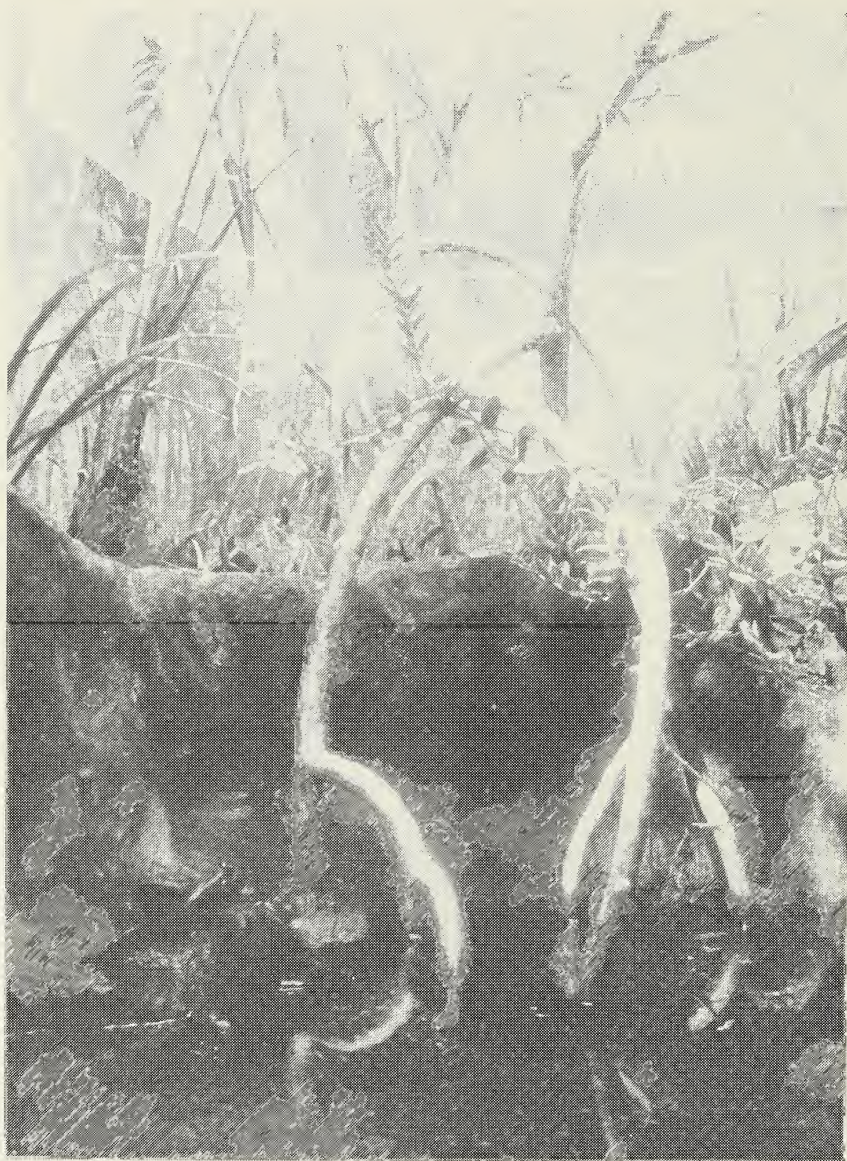
Because of their ability to move so easily out of water for extended periods, they were chosen for an exhibit in the Animals of Antiquity sequence at the Burnet Park Zoo in Syracuse, NY. This area presents the Theory of Evolution of life forms. Mudskippers and lungfish were chosen as examples of animal adaptations which provided the stepping stones leading from life confined to the earth's waters to animals which could utilize land habitats. Only one exhibit was available to display both types of fish. Because mudskippers are found in waters of such a broad range of salinities it was hoped that they could successfully be maintained in the total freshwater environment which the lungfish required. Four tanks were set up to test this factor and the need for high humidity in maintaining mudskippers.

Three twenty-gallon and one forty-gallon tank were set up in a manner similar to that described by Ono (1982). Undergravel filters covered the front third of each tank lengthwise. Gravel covered the filters and the depth of gravel gradually increased to approximately 3 inches at the back two-thirds of the tank. A 3-inch high plexiglass barrier provided support to the gravel area in the rear. Water level was maintained at approximately 2 - 2.5 inches depth. Flat rocks and some branches were used as objects for the mudskippers to haul out on and smoothly bridge the plexiglass barrier. Moss, rocks and plants were placed on the high ground to provide hide sites and thus security for the fish.

Forty-eight mudskippers (*Periophthalmus schlosseri*) of approximately two inches length were obtained and randomly distributed, 12 to each of the four tanks. Maintenance of all four tanks was the same; light misting once per day, partial water changes every other week, feeding 1 or 2 times per day. Each morning frozen brine shrimp (which was alternately supplemented with other frozen food such as mosquito larvae, bloodworms, glassworms and daphnia) was dropped on the flat surfaces in the tanks. Once acclimated to this system of food delivery, many of the fish would jump several inches to reach the spatula used to deliver the food. On alternate days pinhead crickets or fruit flies were provided in the afternoon.

Mudskippers. *Continued*

Record was kept of all known deaths and counts were kept of all observed live fish. These counts did not necessarily reflect the total number dead or still alive on any given day as not all of the fish would come out of their hide spots at any one time nor were all bodies of deceased animals found.



Mudskipper exhibit at the Burnet Park Zoo, Syracuse, NY. A Mudskipper is visible in the left-hand quadrant of the photo. The other portion of this exhibit (not shown) housed Lungfish. *(Photo courtesy of the author)*

RESULTS

Table 1.

DAY	% KNOWN DEAD				
	Tank	1	2	3	4
14		100	-	-	-
20		-	58	-	-
34		-	58	25	-
150		-	58	50	25
365		-	67	67	25
428		-	67	67	33
458		-	92	83	33
472		-	92	83	50

Key: 1- freshwater, no cover, 2 - freshwater, humidity cover,
3 - brackish water, no cover; 4 - brackish water, humidity cover

1) By day 14 there was 100% mortality in the tank with freshwater and no humidity cover.

2) In the freshwater tank with humidity cover there was 58% mortality by day 20, no change up to day 150, 67% by day 365 and one was still alive after 458 days.

3) In the brackish water tank with no humidity cover there was 25% mortality by day 34, 50% by day 150, 67% by day 365 and 2 still living after 458 days.

4) In the tank with brackish water and a humidity cover there was only 25% mortality up to day 150, 33% after 428 days and 6 were still living after 472 days.

Table 2.

Freshwater	Average Humidity Over 365 Days	
	Covered	Non-covered
AM	95.2 + 2.8	84.5 + 4.5
PM	95.2 + 5.2	78.3 + 4.7
Brackish		
AM	84.2 + 11.8	74.7 + 11.5
PM	86.0 + 9.1	80.9 + 9.6

Table 3.

95% Confidence Intervals for Differences of Means of Humidity Over 365 Days

Means Compared	AM	PM
Tank 2 + 1	10.7 + 1.28*	16.9 + 1.30*
Tank 2 + 4	11.0 + 0.39*	9.2 + 0.40*
Tank 2 + 3	20.5 + 0.39*	14.3 + 0.40*
Tank 4 + 3	9.5 + 0.50*	5.1 + 0.45*
Tank 4 + 1	0.3 + 1.21	7.7 + 1.32*
Tank 3 + 1	9.8 + 1.21*	2.6 + 1.32*

* Denotes differences considered statistically significant.

There were significant differences in the humidities of the four tanks. As would be expected the tanks with the greatest humidity were the covered tanks, with the freshwater tank showing a greater humidity than the brackish tank. This increased humidity, however, did not appear to greatly improve the chances of survival over those in brackish water both covered and uncovered.

Table 4.

Average Humidity Over 1ST 14 Days

Covered

Non-covered

Freshwater

AM	96.6 + 1.4	84.5 + 4.5
PM	96.7 + 1.9	78.3 + 4.7

Brackish

AM	94.9 + 2.4	86.5 + 5.1
PM	92.9 + 3.8	88.7 + 3.0

Table 5.

95% Confidence Intervals for Differences of Means of Humidity Over 14 Days

Means Compared	AM	PM
Tank 2 + 1	12.1 + 1.32*	17.4 + 1.48*
Tank 2 + 4	1.7 + 1.04*	2.8 + 1.27*
Tank 2 + 3	10.1 + 1.39*	7.0 + 1.20*
Tank 4 + 3	8.4 + 1.47*	4.2 + 1.39*
Tank 4 + 1	10.4 + 1.41*	14.6 + 1.64*
Tank 3 + 1	2.0 + 1.68*	10.4 + 1.59*

* Denotes differences considered statistically significant.

Because humidity data for tank #1 (freshwater, no cover) was collected for only the 14 days that these fish lived it was deemed necessary to compare the humidities of all tanks during these 14 days (which occurred in July) to determine whether humidity differences during that time could have led to the speedy deaths of these animals. Results show that there was a considerably lower humidity in this tank as compared to the others (Table 5).

Discussion

Thus low humidity combined with lack of salts in their water is obviously an unsuitable environment for these animals. Increased humidity appears to improve their chances a bit, but it was obvious that mortalities were unacceptably high in all but the tank with high humidity and brackish water. Neither factor alone led to acceptable survival rates but together they acted to greatly increase the survival of these animals. This species is capable of handling temporary exposure to either freshwater or low humidity but neither is acceptable over the long term.

As a result of this experiment it was obvious that the Zoo's exhibit would need to be divided into two totally separate water systems if we wished to display both mudskippers and lungfish. This work has been undertaken. The lungfish side utilized the original tank plumbing and undergravel filtration system while the mudskipper side is in essence a fiberglass/wood box which sets within the large covered tank. This side also used an undergravel filter as well as an Eheim filter to circulate water. We currently have been able to display these animals successfully side-by-side but separate for over one year.

Bibliography

- Gordon, M.S., Boeteus, J., Evans, O.H., and L.C. Oglesby. 1968. Additional observations on the natural history of the mudskipper, *Periophthalmus sobrinus*. Copeia 1968(4): 853-857.
- Gordon, M.S., Gabaldon, D.J. and A. Y.-w Yip. 1985. Exploratory observations on microhabitat selection within the intertidal zone by the Chinese mudskipper fish (*Periophthalmus cantonensis*). Marine Biology 85:209-215.
- Mancini, A. 1991. Mudskippers in nature and in captivity. Tropical Fish Hobbist 6:10, 13-14, 17-18, 21-24.
- Ono, R.D. and D. Sponder. 1982. Table-top Mudskippers. Freshwater and Marine Aquarium 10:46-48, 57-58.



Keeper's Alert

Ann Newton, Hospital Keeper at the Gladys Porter Zoo in Brownsville, TX recently wrote a letter to L.L. Bean Company concerning the lack of a really good 'zoo' boot on the market. As most of you are probably aware L.L. Bean of Freeport, ME is world-renowned for their outdoor gear. In her letter Ann noted the need for a truly comfortable boot which would have a rubber upper and be easily disinfected. She also cited the need for a boot which not only provided foot protection, but also support for a profession which spent most of its day "on its feet".

Leon A. Gorman, Presidnet of L.L. Bean wrote back that the idea of a "zoo" boot was an interesting one, but that he was uncertain as to whether there was a market for such a product. He intimated that if there were such a need, the company's design team would likely be able to come up with a boot fitting the necessary zoolife criteria.

If you feel this idea has merit, please write to Mr. Gorman expressing what you would like to see in a 'zoo boot' - what type of work you do and what features you would like to see in a boot. We certainly can't guarantee that your letter will culminate in the production of a truly comfortable, functional boot for zookeepers, but we know for certain that it will never happen unless L.L. Bean knows there is a market for it.



Chapter News

San Diego AAZK Chapter

1991 AAZPA National Conference: "Partners for a Future: Working Together for Global Conservation" was the challenging international theme for the 67th Annual Conference of the AAZPA. It was the Zoological Society of San Diego's pleasure to host the Conference from 15-19 September. Social events included evenings at Sea World and the Wild Animal Park; and a 3-mile "Rhino Walk" with Michael Werikhe to raise awareness and funds.

Post-conference Events: Center for Reproduction of Endangered Species (CRES) Conservation Dinner - the CRES Conservation Award Dinner was held on 20 September. Michael Werikhe was the worthy recipient of the Zoological Society of San Diego's Conservation Medal.

The 11th Annual Celebration for the Critters Party benefiting CRES was held on 21 September. Many thanks to Chapter members and everyone who helped make the Conference and other events such a success!

September Chapter Meeting -

On 11 September, Sea World hosted an evening observing the latest killer whale baby. Takara, which means treasure in Japanese, was born on 9 July. She nursed from her mother, Kasatka, and played with Orkid, a calf born in 1988. Several brave guests who snuggled the sides of the Shamu Stadium pool received a playful salt water splash (or shower in some cases) from Kasatka!

The Chapter was pleased to have Pat Thomas, Supervisor of Special Projects at the Bronx Zoo, speak on 12 September. Mr. Thomas gave an impressive slide presentation on large, naturalistic exhibits as he discussed how the zoo operates and survives through the harsh, snowy winters.

Mid-week during the AAZPA Conference, the Chapter was proud to present Richard Block of the World

Wildlife Fund at the Zoo Otto Center. Mr. Block is Director of Public Programs for WWF and also serves as their liaison with zoos and aquariums worldwide. Richard began his talk in a most conventional manner. He questioned the audience about endangered species, then promptly tossed a poison arrow frog toy as a reward to whoever answered correctly!

During his enlightening slide presentation, Richard addressed environmental, cultural and economic issues; endangered species, captive propagation, the reintroduction of endangered species, tropical forests, habitat destruction, differences in cultures and their uses of resources, pesticides, pollution, toxic/solid waste disposal, recycling, human population growth, the role of zoos, and the importance of education and ecotourism. He summed up the lecture by reminding each one of us to do his or her part: "It's like fitting pieces in a puzzle - each of us can do a little, one piece at a time. Don't give up. What counts is what we do."

Keeper Grant Awarded: Primate Keeper Rachel Watkins Rogers is the winner of this year's \$300.00 grant which is given annually by the San Diego Chapter to sponsor presentations by Chapter members at the AAZK National Conference. Guy Lichty (Mammals/Zoo), and Terri Peterson (Trainer/WAP) also represented the S.D. Chapter at the Toledo Conference last month.

Congratulations to Ric Urban, a bird keeper at the Houston Zoo, for winning our conference logo contest. Ric will receive free registration at the 1992

AAZK National conference hosted by the S.D. Chapter and his logo will be represented on conference printed material and merchandise. (Editor's note: Ric's winning design will be revealed in an upcoming issue of AKF.)

In other Chapter news: The Board of Directors is reviewing ways the Chapter can support the Tagua Project. Kathy Hawk has resigned from the Board of Directors. Kathy devoted much time to the Chapter and we wish her the best always.

Chapter News, Continued

Chapter Provides Support for Pam Orsi Memorial: A tragic accident took the life of elephant keeper Pam Orsi on 14 March at the Wild Animal Park. In tribute to her memory, her many friends have set up a fund to purchase a bronze statue of several elephants that will be placed at the new Asian Elephant Overlook. Donation boxes have been set up at both Zoo and WAP employee lounge areas. The S.D. Chapter raised \$125 at a recent raffle and all proceeds from the October beach party have gone to the fund also. Word has spread nationally through AAZK with the hope that more support will be generated by caring individuals across the U.S.

--Mary Dural, Chapter Liaison

AAZK Welcomes New Chapters

AAZK is pleased to welcome two new Chapters into the Association. They are:

Gainesville Area AAZK Chapter

Located at Santa Fe Community College Teaching Zoo, this Chapter's mailing address is 6727 N.W. 18th Ave., Gainesville, FL 32605.

Their officers are:

President.....Alycin Hayes
Vice Pres.....Nancy Hardesty
Secretary.....Belinda A. Galvin
Treasurer.....Rachelle B. Wright
Liaison.....Patricia Sammarco

Birmingham Zoo Chapter of AAZK

This new Alabama Chapter's mailing address is c/o Birmingham Zoo, 2630 Cahaba Rd., Birmingham, AL 35223.

Officers for this year are:

President.....Deborah A. Bennett
Vice Pres.....Steve Holt
Secretary.....Donna Clark Bowen
Treasurer.....Mike Warren
Liaison.....Karen Leitcher

Tucson Chapter AAZK

Howdy AAZK! The little chapter that could keeps getting smaller, but we keep hanging in there. We held another swap meet selling mostly items donated by our docents and staff. The \$300 raised helped offset the \$500 worth of building materials for a flight cage. We built the cage for a local animal rehabilitator after she spoke at one of our meetings. She uses the flight cage to house sick or injured animals that she will eventually release back into the wild.



Our monies have also gone to continue the sponsorship of Mr. Babubai, our foreign keeper in India. Also we helped defray the costs to send Chapter member and AAZK Board member Ed Hansen to the Toledo Conference.

Upcoming activities include a bake sale at our annual Tucson Zoological Society picnic. So long from Tucson.

--Rusty Agte, Chapter Liaison

Where To Purchase Chapter Products

AAZK Magnetic Keeper Safety Signs - Flint Hills AAZK Chapter, Sunset Zoo, 11th & Poyntz, Manhattan, KS 66502. \$10.85 each plus \$1.00 P&H.

AAZK Logo T-Shirts - (\$8.50) available in tan, blue and brown in S,M,L,XL., **Sweatshirts** (\$18.00) available in grey or maroon with black logo in sizes M,L,XL. Both are 50/50 poly/cotton; and **Colder Holders** (\$3.50) - Little Rock Chapter AAZK, Little Rock Zoo, #1 Jonesboro Dr., Little Rock, AR 72205.

Chapter News, *Continued*

AAZK Logo Auto Decals and Stickers - Mill Mountain AAZK Chapter, Mill Mountain Zoo, Inc., P. O. Box 13484, Roanoke, VA 24034. Decals - \$2.50 each; Stickers \$1.50 lg/\$0.75 small.

AAZK Logo Mesh Shopping Bags - Philadelphia AAZK Chapter, Philadelphia Zoo, 34th St. & Girard Ave., Philadelphia, PA 19104. These 16" x 19" white nylon mesh bags have the AAZK logo printed on the navy canvas top. They are reuseable, strong and have a squared bottom for easier filling. Each bag is \$5.00 which includes postage.

AAZK Logo Keychain - Dallas Zoo AAZK Chapter, 621 E. Clarendon, Dallas, TX 75203 attn: Sara Weller. This keychain has a thermometer and the AAZK logo on the front and a wind chill chart on the back. Thermometer is encased in durable acrylic and is approximately 1" x 2" in size. Price each is \$4.00 which includes postage.

AAZK Logo Bumper Sticker - The Jacksonville, FL Chapter offers this silk-screened 3" x 9" bumper sticker with kelly green lettering, black border/center line and the nationally recognized AAZK logo on a white background. The imprinted message reads "Zoo Parks - Modern Arks". These bumper stickers are \$2.00 each for 1-49 and \$1.55 each for 50 or more.

The postage is an additional \$.30 per

each 5 bumper stickers ordered. If you would be interested in purchasing these for your fundraisers or to be used as a sales item in your gift shop - an item that promotes both Zoos and AAZK, please contact either Micki Corcoran or Ann Hinton at this address: Jacksonville AAZK Chapter, 8605 Zoo Road, Jacksonville, FL 32218.

AAZK Logo Flying Saucers (Frisbees) - made from recycled plastic, these flying saucers are emblazoned with the AAZK logo in black on bright green. Available from the Beardsley Zoo AAZK Chapter for \$5.00 by contacting Chapter Vice President Rob Thomas, c/o Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610.

Zoo Stories Book - this book consists of nearly 150 items submitted by keepers across the country such as: anecdotes about keepers, animals and visitors, mispronounced or misidentified animals, clever animal names, off-the-wall phone calls, etc. Cost is \$3.50 plus 70 cents for postage. Make checks payable to Brookfield Zoo Chapter and send to: Brookfield Zoo Chapter, 3300 Golf Road, Brookfield, IL 60513.

AAZK "Keepers Care" Buttons are once again available from the Lincoln Park Zoo AAZK Chapter, 2200 N. Cannon Dr., Chicago, IL 60614. Attn: Susan Moy. Cost is \$5.00 for 5 buttons (minimum order of five please).



Self-injurious Behavior in Callitrichids

Dear Colleague:

As part of a graduate research project, I am attempting to gather information concerning self-injurious behavior of marmosets and tamarins. Although I would appreciate any information you could give me about all types of SIB observed in your callitrichids, I am especially interested in "over-grooming" that leads to open wounds or a persistent picking at wounds that prevents healing. If your institution houses callitrichids, please complete and return the accompanying survey. Even if your monkeys exhibit no self injurious behavior, please report that, and return the survey. The names of the participating institutions and keepers will be confidential. Thank you.

1. Do you presently or have you ever housed any callitrichids that have exhibited self-injurious behavior? YES NO

2. Please list the species, sex, age and SI behavior exhibited:

3. Describe the environment in which the animal is/was housed (dimensions, objects in enclosure, group size, other species):

4. Describe how/if the situation was resolved (treatments attempted, effective treatment, if behavior resolved itself):

5. Please contribute any other pertinent information:

Please mail completed survey to address listed below by 15 January 1992. Thank you in advance for your assistance in this matter.

Mail to: Tami Guy, Psychology Department, Bucknell University, Lewisburg, PA 17837



More Reflections on Peru

Part I

By

Robert Bergahaier, Mammal Foreman
Philadelphia Zoological Society
Philadelphia, PA

Occasionally I take some good-natured teasing from my co-workers about my various travels. The Zoo's Exhibits Department has a standing joke that I am always going off to Peru, or some other unusual destination. I have also been asked just why I have traveled twice to that country.

Peru is an ecological microcosm of the entire South American continent. The western coast is a dry desert with offshore islands which contain large populations of seabirds and marine mammals. In the central part of the country is the high Andes with its dry western slopes, pampas-like altiplano, immense glaciated peaks, and, on the eastern slopes, moist cloud forest. The final major ecosystem is the vast Amazonian forest which covers approximately one half of Peru. As a result of this diversity of habitats, Peru has an equivalent diversity in plant and animal life. Peru has more species of birds and plants than Canada and the United States combined. Its mammal species range from fur seals and sea otters on the coast, to vicuna and spectacled bears in the Andes, to jaguars and giant river otters in the jungles.

My first trip to Peru was in July of 1983. During that excursion I got to see examples of the three major habitats and lots of interesting wildlife. My personal bane of travel is that I always feel that I could have seen more. While traveling through a country I have also found that conversations with other travelers often reveal tips on areas which have good wildlife populations and are accessible.

My main reason for returning to Peru had to do with my fascination with the Amazon rainforest. The two areas that I visited in '83 enthralled me with their amazing variety of birds, herptiles, insects and plant life. However, both areas had been heavily hunted and large mammals were rare, with some species completely shot out. Several scientists to whom I talked mentioned that the Manu River region still supported healthy populations of the larger mammals found in the forest. However, they also cautioned that access to Manu was difficult and expensive. After my return I started coming across references to adventure travel tour groups which had started itineraries which included Manu. I then decided that I would return to Peru.

Wilderness Travel based in Berkeley, CA had the trip that suited my interest and travel plans. Manu is so remote that it often takes almost a week of travel up river from the nearest towns until you enter the wilder areas. The Wilderness Travel tour avoided this by arranging a series of charter flights by small plane which coordinated with a more standard up river delivery of supplies. This allows the participant to spend more time exploring the jungle.

Most trips to Peru start in Lima. My memories of Lima in '83 were not favorable. Except for the Lima Zoo, I had found the city dirty, dingy, and dangerous. I guess my previous opinion was that of a typical inexperienced gringo traveler. On this visit I thoroughly enjoyed my time spent in the city. Instead of boarding in the center of Lima, I stayed in the Miraflores section which is located along the Pacific coast. It is the newest section of the capital and has many fine hotels, nightclubs, and restaurants. From there you can walk down to the beach and I often observed guanay cormorants here. Lima seemed less dangerous than before since armed troops and civil guard are often in evidence. The increased military activity was due to the equally increased bombings and attacks by the

More Reflections on Peru, Part I, Continued

Maoist terrorist movement the Sendero Luminoso, "The Shining Path". The Shining Path seldom bothers tourists, however, the presence of the military helps to keep down the amount of street crime. Lima is unfortunately well known for pick-pockets and muggers.

During my Lima stay I visited several excellent museums and, of course, revisited the Lima Zoo. The zoo showed some obvious improvement in three years. The animal areas were better kept, the keepers has been issued some snappy new uniforms, and several new exhibits had been created. These included a vicuna paddock with a large breeding herd, and expanded bird facilities. A primate island exhibit which contained capuchin monkeys in 1983, now had woolly and spider monkeys and agoutis. The island is well planted with trees and the spider monkey group had several youngsters. A mountain tapir had also been added to the collection. The international section of the zoo still had rather bleak, sterile exhibits, but all animals seemed better off than during my previous visit.

As much as I enjoyed my rediscovery of Lima, it was time to get on to the forest. To get to Manu one first has to get to Cuzco by air from Lima. When I arrived at the Lima airport I quickly discovered that traveling in Peru at the end of July was not a good idea. That is when winter vacation, based around Peru's Independence Day, starts in Peru, and all transportation systems in the country are jammed to capacity. I have never seen airline ticket counters so crowded. Fortunately our representative from Wilderness Travel literally pushed us over and through hordes of passengers and got us on a flight to Cuzco.

In Cuzco we had enough time to get a cold beer and then catch our flight to Manu. Our group needed three separate flights to get our entire party to the rendezvous point. My flight experienced a period of air turbulence which was more than made up for by the fantastic views as we descended the east slopes of the Andes to the jungle. We landed on a small grass-covered clearing in the forest. After disembarking I quickly got a reminder of what I had forgotten about jungles in three years--they are hot, and often uncomfortable, bug-infested places. My survival instincts quickly returned and I put on my hat, rolled down my sleeves, and applied insect repellent to my hands and face.

After loading our day packs on a motorized 30-foot dugout canoe we headed up river. Our tents, packs, and food followed on a smaller craft. We traveled up river two hours and made camp. Flocks of parrots, blue/gold and military macaws flew overhead. Near dusk we heard howler monkeys calling up river. Someone found tapir tracks on the beach where we spent the first night. Bats with orange furred bellies skimmed the river for insects. When darkness came I saw more stars than I had ever seen in my life. Now I remembered why I wanted to come back to the Peruvian forest.

Manu is a huge protected area of over 5000 square miles. It is uninhabited except for park staff, researchers and some Indians. The Indians are left alone since they have been known to fire arrows at any Manu staff which approach their territories. The park is surrounded by a forest reserve which is also patrolled by the park's rangers. It is this forest reserve that tourists are allowed to visit. Wildlife populations in the reserve area were once heavily hunted, but are now recovering.

One example of this was the number of giant river otters our group observed. We saw a total of 11 individuals of this highly endangered fur bearer. While canoeing an oxbow lake of the main river, I came across a family of eight. We had been previously warned that family groups can be aggressive and will on occasion attack and tip canoes. I kept my distance and followed the group for about fifteen minutes. They are huge animals, with adults reaching six feet in length, and are blackish-brown color with white splashes on the throat. When the otters realized I was following them, they arched their long necks out of the water and gave harsh barking-like sounds. The group moved in unison, swimming much like a school of dolphins. I lost sight of them as they rounded a bend in the lake. That experience alone was worth the entire trip to Peru. The otters are probably so large and aggressive due to their environment. They coexist within lakes full of piranha and large caimans, both of which they are known to kill and eat. In short--you mess with them at your own peril! One otter later drove two of our guides out of a lake in which they were swimming.

More Reflections on Peru, Part I. *Continued*

Manu is well known by primatologists for its diverse and numerous monkey populations. I managed to see and photograph spider, woolly, whitefronted and blackcapped capuchins, owl, and red howler monkeys, pigmy marmosets and saddle-backed tamarins. I also heard dusky titi monkey calls and therefore had contact with nine of the eleven species of primates found in the region. Large mammals are very difficult to see in heavy forest. Tracks, however, were plentiful. Others in the party saw peccary, brocket deer, and ocelot. I spotted coati and a large reddish squirrel. Coatis, I discovered, jump straight up onto vines and tree limbs when surprised. Since they make so much noise when they do this I am not sure who is more startled--the coati or the human observer. One morning we discovered the tracks of a tapir which had marched around our camp on the beach while we slept. One night I awoke to a jaguar's roaring in the distance across the river.

Birdlife was prolific and varied. Flights of macaws and parrots were almost always overhead. We saw terns, orinoco geese, skimmers, herons, spoonbills, and horned screamers along the river; trumpeters, motmots, and toucans in the forest; and boatbilled herons, oropendolas, moscovy ducks, and hoatzins on the oxbowed lakes. I have only mentioned a handful of those we identified. The forest has such amazing diversity of bird life.

That diversity extends to all forms of life. I saw river turtles and white caiman along the river, and large black caiman on the oxbow lakes. The insects, particularly the ants, I found fascinating. The most interesting were the leaf cutter ants with their columns of workers carrying leaves back to their mounds. The leaves, after being stored underground, grow a fungus which the leafcutters feed upon. Several times I came across swarms of army ants whose predatory movements cause other insects to scatter out of their way. Often these refugees fall prey to the flocks of antbirds which follow the army ant columns. Occasionally you would see the huge blue morpho butterflies glide across the trails. Other insects included colorful wasps, and sweat bees which quickly cover your pack to seek the salt from your sweat if you place your gear on the ground.

The number of different plants was astonishing. There are beautiful orchids and other flowers. You see huge strangler figs and other trees anchored in the soil by their large buttresses. You try to avoid the less benign plants, those with spikes running up and down their lengths. If you slip and try to break your fall by grabbing on to these species, your hands could become impaled on the trunks. The sharp points leave nasty wounds.

Extremely bothersome were the sand flies and midges on the beaches where we camped. Mosquitoes were also plentiful. The river where we bathed contained rays with sharp spines on their tails. To avoid them you either wore sneakers in the water or shuffled your feet in the sand as you waded in. The rays are timid and move away from the motion. Also present were the tiny spiny catfish notorious for its habit of swimming up and implanting itself in human urinary tracts. The catfish's normal niche is living in the gills of larger fish. Humans avoid them simply by wearing tight bathing suits and not urinating in the water while bathing. That last bit of advice is given because the spiny catfish will follow a stream of urine to its source, that being you!

We slept in tents and ate under an enclosed dining fly. The food was surprisingly varied and good. We had a group of twenty, counting tourists and working staff, who in spite of the close and often uncomfortable living arrangements, got along well. We spent most of our stay in the jungle near a oxbow lake called Cosha Salvador. The area had a good trail system and we were free to spend as much time as we wanted out in the forest, with guides or without.

One day we took an excursion up river to the entrance of the Manu Park at Pakitsa. Across from the ranger station three Indian women have taken up residence. Their origins are rather mysterious, since they speak a language none of the park rangers can understand. It is most likely that are members of one of the elusive Indian tribes of Manu. Very curious of visitors, they examined us, touching some, and one seemed to chant something as we left them. Our guide requested that we not photograph them since she felt doing so was demeaning to the women.

More Reflections on Peru, Part I, Continued

At the end of our week's stay we traveled down river and flew back to Cuzco. On the flight back we followed the twisting bends of the Manu River. Most people, including myself until this trip, think of the Amazon forest as being a static climax community. Along river systems, such as Manu, it is not. The river constantly changes direction on its course to the sea. When it leaves its banks it removes whole sections of forest. So instead of uniform climax growth, a mosaic of brush, secondary and climax forest results. I could easily see the results of this process from the air. The previous course of the Manu was evident from the isolated oxbow lakes scattered throughout the jungle below. Oxbows are caused by changes in the river's flow. They result from whole sections of the river being cut off when the river's direction is changed. The oxbows are a black color, unlike the reddish-brown flow of the sediment-filled main river. They reflect the sun and from above glisten like black jewels. It takes about a hundred years for an oxbow to eventually fill with soil and another hundred years for a new forest to grow. This process has continued for tens of thousands of years, and as long as protected areas such as Manu exist, will continue in the future.

--To be continued



AAZK Publications Available

AAZK Diet Notebook, Mammals, Vol. 1 -contains approximately 325 diets representing 213 species and subspecies from fourteen participating institutions. The diets are arranged by taxonomic order using ISIS numbers in a durable and attractive three-ring binder. Each Diet Response Form included in Volume 1 contains the following information: common name, scientific name, ISIS number, the contributing individual, their institution and its address, how long the diet has been used, whether the animals have bred while on the diet, the diet ingredients, instructions for preparation, notes and remarks, special considerations and nutritional analysis (if available). Cost is as follows: 1) AAZK Members \$40.00; 2) Non-members \$55.00; 3) Institutions \$70.00. These prices represent prepaid order prices and include postage for the U.S. and Canada. Those placing orders from overseas should contact AAZK Administrative Offices for additional postage charges. Please allow 4-6 weeks for delivery. Make checks payable to "AAZK Diet Notebook" (U.S. FUNDS ONLY).

Zoonotic Diseases, 2nd Edition -this 40-page reference work details the most common zoonotic diseases, offers guidelines for preventive control and covers personal hygiene and disinfection procedures. Information on each disease is presented in a text format which includes Ethiology, Agent, Means of Transmission to Man, Global Distribution, Alternate or Intermediate Hosts, Human Incubation and Human Symptoms. Editor of this volume is Bruce Clark of the Toledo Zoo. Prices are: 1) Professional Members \$5.00; 2) Other AAZK Membership Categories \$6.50; 3) Non-members \$8.50. These prices include shipping and handling within North America. Orders outside of the U.S. and Canada should add \$3.00 for foreign postage by Air Mail. Make checks payable to "AAZK" in U.S. FUNDS ONLY. Please allow 3-4 weeks for delivery.

For either publication send complete mailing address and check or money order for correct amount to: AAZK, 635 Gage Blvd., Topeka, KS 66606 U.S.A.

ALL ORDERS MUST BE PRE-PAID



UFAW Offers Great Ape Enrichment Pamphlet

Chimpanzees, gorillas and orangutans are all highly intelligent animals which in the captive environment need stimulation to prevent boredom and destructive behavior. Universities Federation for Animal Welfare (UFAW), the science based charity, has produced a further leaflet in its environmental enrichment series, entitled "Puzzle Feeder for Great Apes". This leaflet describes a method of enriching the lives of great apes in captivity using a feeder that requires the apes to use sticks as tools in order to gain access to the food.

The feeder is an inexpensive, practical and effective form of enrichment which increases the great apes' levels of activity in addition to being highly entertaining and educational to zoo visitors. Copies of "A Puzzle Feeder for Great Apes" are available free on receipt of a stamped, self-addressed envelope. Send your request to: UFAW, 8 Hamilton Close, South Mimms, Potters Bar, Herts EN6 3QD, United Kingdom.

Other leaflets in the environmental enrichment series include:

1. "Lar Gibbon Duets"
2. "Mealworm Dispenser for Meerkats"
3. "Puzzle Feeder for Orangutans"



1991 Preakness Clean-up Video Available

Thank you for your interest in obtaining copies of our video "On the Ground Conservation that Really Works - Preakness Clean-up 1991" presented at this year's conference in Toledo. If you or your Chapter become involved in a similar project or even if you are thinking of developing a clean-up, please contact us at the address or phone numbers listed below - we'd like to help in any way we can. To order video tape(s) please fill out the order form below and send it along with a check for \$5.00 (each tape) made out to: The National Aquarium in Baltimore, to cover shipping costs.

_____ 1990 Preakness Clean-up (A documentary on how the project was planned and executed for the first time ever.)

_____ 1991 Preakness Clean-up (An update on this successful fundraiser along with an inspirational music video.)

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Book Review

Biology of Amphibians

By William E. Duellman and Linda Trueb
McGraw-Hill Book Co.
1221 Ave. of the Americas
New York, NY 10020
1986. 670 pgs. \$44.95

Review By Rick Emmer
Aquatics Department
Cleveland Metroparks Zoo
Cleveland, OH

Duellman and Trueb's Biology of Amphibians is destined to become a classic of herpetological literature. As such, it is likely to replace another classic, G. Kingsley Noble's The Biology of the Amphibia (1931, McGraw-Hill; reprinted 1954, Dover), as the standard reference on amphibians. The text, supplemented with numerous figures and tables and a 53-page bibliography, presents a thorough review of virtually every aspect of amphibian biology. The text is divided into five sections: a brief Introduction plus four parts - Life History (Chpts. 2-7), Ecology (Chpts. 8-12), Morphology (Chpts. 13-14) and Evolution (Chpts. 15-19).

Introduction to the Amphibia (Chapter 1) sets the stage for the rest of the book, providing a brief overview of amphibians and their ways, a short history of the study of amphibians from the 17th century to the present, and a look at the prospects for future research in amphibian biology.

Part 1 (Life History) begins with a look at Reproductive Strategies (Chapter 2), considering hormonal and environmental factors affecting breeding cycles; reproductive modes (internal vs. external fertilization, terrestrial vs. aquatic eggs, etc.); parental care; and a consideration of the evolution of these various components of reproductive strategies, in their various interspecific combinations, to maximize the reproductive success of the different species of amphibians. Chapter 3 (Courtship and Mating) discusses the factors involved in breeding; sensory cues utilized in locating the breeding site; secondary sexual characters (courtship glands, nuptial excrescences, tail fins and the like); courtship behavior; and the acts of fertilization and oviposition. Chapter 4 (Vocalization) analyzes the anatomical, environmental and behavioral aspects of sound production and reception. Chapter 5 (Eggs and Development) considers early embryological development, from fertilization through birth or hatching. Chapter 6 (Larvae) covers anatomy, physiology, ecology and behavior of larvae from hatching up to metamorphosis, and Chapter 7 (Metamorphosis) describes the morphological and physiological changes that occur during metamorphosis and briefly discusses neoteny.

Part 2 (Ecology) presents an in-depth look at interactions between amphibians and their environment. Chapter 8 (Relationships with the Environment) deals with the major aspects of the abiotic environment: water economy (osmoregulation, renal function, behavioral and physiological adaptations to arid conditions, etc.), temperature (thermal tolerance, thermoregulation), gas exchange (respiratory, circulatory and behavioral adaptations for oxygen uptake and the release of carbon dioxide) and energy metabolism (aerobic vs. anaerobic). In Chapter 9 (Food and Feeding) the authors examine the various strategies utilized by amphibians in selecting, locating and capturing prey. Chapter 10 (Enemies and Defense) looks at diseases, predators and antipredator devices (cryptic coloration, death feigning, poisonous secretions and aposematic coloration, the unken reflex, etc.). Chapter 11 (Population Biology) examines the various factors that influence

Book Review, Continued

the structure of amphibian populations, such as growth rate, size, longevity and territoriality. In Chapter 12 (Community Ecology and Species Diversity) the authors discuss certain types of amphibian communities (forest-floor, stream-side and tropical) and compare species richness in different habitats.

Part 3 (Morphology) gets down to the nitty-gritty of amphibian anatomy. By far the longest chapter in the book, Chapter 13 (Musculo-skeletal System) goes into extraordinary detail describing the structure and interactions of the skeletal and muscular systems. The chapter's 45 intricately detailed figures provide the reader with much-needed assistance when wading through the terminology-laden text. Chapter 14 (Integumentary, Sensory, and Visceral Systems) is equally technical in its thorough treatment of the anatomy of the integumentary, sensory, nervous, circulatory, respiratory, urogenital and digestive systems and the endocrine glands.

Part 4 (Evolution) begins, appropriately enough, with the Origin and Early Evolution (Chapter 15) of amphibians, detailing the skeletal anatomy of the most primitive tetrapods (labyrinthodont amphibians) and comparing these extinct animals to the two types of fish (lungfish and lobe-finned crossopterygians) currently being considered as ancestors of the labyrinthodonts. Chapter 16 (Cytogenetic, Molecular, and Genomic Evolution) briefly reviews, from an evolutionary viewpoint, results of recent cytogenetic and biochemical studies in amphibian genetics. Chapter 17 (Phylogeny) considers the evolutionary relationships of the taxonomic families of the three extant orders of amphibians: Caudata (salamanders), Gymnophiona (caecilians) and Anura (frogs). Chapter 18 (Biogeography) interprets the current distribution of amphibians in light of the climatic and geologic changes that have occurred since amphibians appeared in the Triassic Period, some 220 million years ago. Chapter 19 (Classification), the last chapter of the book, presents a detailed, current (as of 1986) taxonomic classification of Class Amphibia.

Throughout the book, the authors make a point of integrating the material from each chapter with the rest of the book, especially from an evolutionary perspective, with the result that the book flows evenly from one chapter to the next, and the reader can jump around from chapter to chapter without losing his/her bearings. The amount of information contained in this volume is.....voluminous! Intended for use by upper-level undergraduate and graduate students as well as professional biologists, this book belongs on the reference shelf in every zoo library.



Publication Available.....

'Parrots require as much time and attention as a human toddler', advises the Universities Federation For Animal Welfare (UFAW) in their new booklet 'The Welfare of Pet Parrots', written by the charity's Scientific Officer, Dilys Roe. Aimed at people thinking about keeping a parrot as a pet, the booklet urges people to consider that looking after a parrot is expensive and time-consuming. UFAW is keen to advise potential owners not to contribute to the trade in wild parrots. The booklet stresses that parrots should be bought only from reputable breeders, as illegal trade is rampant with smuggling and document forgery commonplace.

'The Welfare of Pet Parrots' is a useful and instructive guide to potential parrot owners. The over-riding message in the booklet is 'Do not keep parrots unless you are sure you can satisfy all their needs!' The booklet explains all aspects of parrot care from choosing, housing and feeding, to handling and keeping healthy pet parrots. With amusing illustrations by Rosanne Strachan, the booklet is light-hearted as well as informative.

'The Welfare of Pet Parrots' is available from UFAW, 8 Hamilton Close, South Mimms, Potters Bar, Herts EN6 3QD. Price is £2.50 inc. p&p (check bank for current U.S./British currency exchange rates).



Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 889-2919 (h).

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DISTRICT OF COLUMBIA - Theresa Maas (see address under PA)
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Province of Quebec - Chantal Routhier, Granby Zoo, 347 Rue Bourget, Granby, Quebec, Canada J2G 1E 8
Provinces of Alberta & British Columbia - Vacancy

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKF, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-272-2539.

The City of Fresno is currently accepting applications for the following two (2) positions at the Chaffee Zoological Gardens of Fresno. Individuals interested in these positions must submit a City of Fresno application and supplemental application to the Personnel Office by 5:00 p.m. Wednesday, 27 November 1991. For applications and more information, contact: City of Fresno, Personnel Dept., 2348 Mariposa, Fresno, CA 93721. Phone (209) 498-1574. AA/EOE/H.

ZOO KEEPER...\$1,631 - \$1,984/month. Responsible for the care and observation of zoo animals, maintenance of exhibits, record keeping and interaction with docents and the general public. Requires: One year of experience in the care, handling and feeding of animals in a zoo setting. College level course work in animal science, zoology, biology, or wildlife management is desirable.

SENIOR ZOO KEEPER (Elephants)...\$1,799 - \$2,189/month. Responsible for providing lead direction and participating in the feeding, care and maintenance necessary for the health and well-being of the Zoo's 1.3 Asian elephants, White rhinos and other species, according to AAZPA's Elephant Management Guidelines. Modern exhibit includes hydraulic doors and does not require night chaining. An elephant chute is budgeted for construction in 1992. Requires: Eighteen units of accredited college level course work in animal science, zoology, biology, wildlife management, or closely related field and two years of journey-level paid experience in the care, handling and feeding of elephants. An additional year of qualifying experience may be substituted for the required education.

ZOOKEEPER...prefer paid experience, course work in biological sciences and record keeping ability. Responsible for daily animal care, behavior observation, exhibit/grounds maintenance, and diet preparation. Will work weekends and holidays as required. Salary \$4.69/hr. with adjustments for education and experience, plus benefits. Creating eligible list to fill future vacancies. Send cover letter and resume by **1 December 1991** to: Dan Baffa, Director, Lee Richardson Zoo, P.O. Box 499, Garden City, KS 67846.

KEEPER/BIRD DEPT...responsibilities include the daily care of birds, promoting breeding of target species, interaction with docents and general public. A candidate above entry level must have experience working with birds in captivity. College degree in biology preferred. Salary range \$24,086 - \$28,496/year. Submit resume, letter of interest and references to: Human Resources Dept., Brookfield Zoo, 3300 Golf Rd., Brookfield, IL 60513 by **30 November 1991**.

ZOO CURATOR (City of Sacramento)...\$3088 - \$3753/month plus benefits. This exempt position will plan, organize and supervise care, display, propagation and procurement of zoo animals; direct education programs and oversee supervision of grounds maintenance for the zoo and a children's theme park. Requires 3 years professional experience including supervisory and bachelors degree. Specific requirements, duties and City of Sacramento application available at 921 10th St., Rm. 101, Sacramento, CA 95814. Out-of-area applications call (916) 449-5726 for application. **Filing deadline: 20 December 1991, 5:00 p.m. AA/EOE.**

ZOOKEEPER II...requires experience with husbandry of, training and demonstrating a variety of domestic animals. Eastern/western riding and horse jumping experience preferred. **Available January 1992.** \$6.50/hr. Send resume to: Richard M. Hurst, Director of Human Resources, Indianapolis Zoo, 1200 W. Washington St., Indianapolis, IN 46222.

COMPOUND FOREMAN...for non-profit wild animal facility. Busy, varied responsibilities. Housing and utilities provided. Send resume and references to: Martine Colette, Wildlife Waystation, 14831 Little Tujunga Canyon Rd., Angeles Forest, CA 91342-5999.



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Mail this application and check or money order (U.S. CURRENCY ONLY PLEASE), made payable to American Association of Zoo Keepers, Inc., to : AAZK Administrative Offices, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606 U.S.A.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size **no greater than** 6" x 10" (15cm x 25 1/2cm). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Black and white photos only accepted.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31. FAX # is 913-272-2539.

DEADLINE FOR EACH EDITION IS THE 15TH OF THE PRECEDING MONTH

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December 1991

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Associate Editors: Kayla Grams & Gretchen Ziegler

Animal Keepers' Forum (ISSN 0164-9531) is a monthly journal of the American Association of Zoo Keepers, Inc., 635 Gage Blvd., Topeka, KS 66606. Ten dollars of each membership fee goes toward the annual publication costs of **Animal Keepers' Forum**. Third Class postage paid at Topeka, KS. Postmaster: Please send address changes to:

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This month's cover features artwork by Dave Ackerman, an animal keeper in the Herbivore/Carnivore Building at the Columbus Zoo. The rainforest animals pictured are featured on a sunscreen sold by the Columbus Zoo's AAZK Chapter to support the Programme for Belize. The idea of a sunscreen is to increase people's awareness of the plight of the rainforest and its inhabitants. Children can be involved by coloring their own rainforest. These sunscreens are sold through the Columbus Zoo's Gift Shop with all profits going to save rainforest land. Thanks, Dave!

Scoops and Scuttlebutt

LSIG Offers List of Recommended Books for Zoo/Aquarium Libraries

The second edition of the Recommended List of Books and Other Resources for Zoo and Aquarium Libraries (1991) by the AAZPA Librarians Special Interest Group is now available. For a free copy please contact Kay Kenyon, Librarian, National Zoological Park, Branch Library, Washington, DC 20008, (202) 673-4771.

Thanks to 25th Anniversary Book Donors

In the September 1991 issue of AKF, AAZK Historian Rachel Rogers gave an update of the progress of the History Committee in collecting data for the AAZK 25th Anniversary Book. At that time she also announced that the San Diego Zoological Society had generously offered a \$4,000 matching grant to cover the estimated cost of publishing this commemorative volume. Chapters were encouraged to support the Association and the Book by a donation of \$60 toward the \$4,000 in matching funds we must generate. Individuals were also encouraged to lend their support by donations in any amount. To date we have received donations from the following individuals and Chapters and we would like to take this opportunity to thank them for their generosity and support of this important AAZK project: William H. Disher, San Diego, CA; San Diego Zoo AAZK Chapter, Harmony Frazier-Taylor, Seattle, WA; Detroit Chapter AAZK, Detroit, MI; and F.J. Zeehandelaar, Inc., New Rochelle, NY.

Anyone wishing to donate towards the publication costs of the 25th Anniversary Book should send their donations by 30 March 1992, and checks should be made payable to AAZK, Inc. All donors will be acknowledged in the publication. Send donations to: Rachel Watkins Rogers, AAZK Historian, AAZK History Committee, San Diego Zoo, P.O. Box 551, San Diego, CA 92112-0551.

AAZK Grants Available

The American Association of Zoo Keepers, Inc. announces the availability of two \$750 research grants in the field of zoo biology. Interested applicants should direct their inquiries to Sue Barnard, Chairperson, AAZK Research/Grants Committee, Zoo Atlanta, Department of Herpetology, 800 Cherokee Ave. S.E., Atlanta, GA 30315. The deadline for submission is 31 March 1992.



From the President

Another year draws to a close, and with it my six years as a Board member including two years as President. Being a Board member since 1985 has been a rewarding, enlightening, and sometimes exhausting experience - one I would not have missed for anything. But now it will be nice to pursue my other interests and hey, I may even write a paper again. Or a song about the last six years, now there's a thought...

AAZK is now in its 24th year. As we approach our silver anniversary, we can look back at the trials and tribulations that this Association has undergone; the long, hard work, the millions of hours that volunteers have persevered with the goals of achieving quality animal care and education of AAZK members and the public.

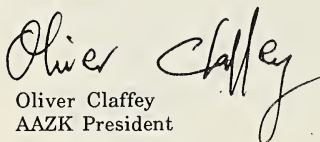
We can reflect with pride on our successes, on our contributions to the zoo field, on our contributions to global conservation and the professional recognition that AAZK has achieved by all that hard work. As professionals we must always be aware of the knowledge we have not yet acquired, of the difficulties we have not yet endured and that, somewhere around the corner, is the key to the problems we haven't yet solved.

I have always believed in the Team concept and Zoo Keeping is, essentially, a team effort. To be in harmony with Mother Nature, we must first be in harmony with ourselves. We must be a team in the section, in the department, in the Zoo, in this Association, in the zoo community and on Mother Earth itself.

It has been an honor serving this Association and I will continue to serve as Immediate Past President and AAZK Liaison to AAZPA.

It is with great pleasure that I hand over the reins to the next President, Ed Hansen, and Vice-president Jan McCoy as well as our newly elected Board members - Mark de Denuis, Ellen Bradfield and Rachel Rogers. They are a fine group of professionals and I know AAZK will benefit from their dedication and leadership.

Have a great holiday season and a very Happy New Year!


Oliver Claffey
AAZK President

Information Please

I am interested in exchanging information with others who are charged with the care of Northern California/North Pacific marine invertebrates (sea stars, sea urchins, giant chitons, hermit crabs, etc.). At my facility these animals are located in our Touch Tidepool and are allowed to be handled by the public. These animals are obtained once a year from the ocean. The current policy is to allow these animals to be handled everyday as much as the public likes. Animals are not rotated to allow for recuperation and no food is put into the tanks specifically for these animals. I would be interested to know from others what their protocol is for using such animals for public education displays, whether animals are rotated, if handling is controlled, if food is supplied, how high mortality rates can be lowered, etc. Any information in this vein would be most welcome. Please send to: Theresa Murney, 822A 30th Avenue, San Francisco, CA 94121



Births & Hatchings



Sea World of Texas...reports the following first-time hatchings for that facility: 1.1.0 Umbrella cockatoo (*Cacatua alba*), 0.0.2 King penguin (*Aptenodytes patagonicus*), 0.0.1 Common murre (*Uria aalge*), 0.0.1 Common puffin (*Fratercula arctica*), 0.0.1 Sacred ibis (*Eudocimus ruber*), 2.0 Black neck swan (*Cygnas melanocoryphus*), 0.3 NeNe goose (*Branta sandvicensis*), 0.2 European shelduck (*Tadorna tadorna*), 6.6 Cape teal (*Anas capensis*), 7.2 Chestnut teal (*Anas castanea*), 1.1 Garganey teal (*Anas querquedula*), 8.4 Hottentot teal (*Anas punctata*), 10.12 Marbled teal (*Marmaronetta angustirostris*), 1.0 Versicolor teal (*Anas versicolor*), 0.1 Chiloe wigeon (*Anas sibilatrix*), 5.0 Silver Bahama pintail (*Anas bahamensis*), 3.5 North American pintail (*Anas a. acuta*), 1.2 African yellowbill (*Anas undulata*), and 1.3 White-faced tree duck (*Dendrocygna viduata*).

Their Mammal Dept. reports the births of 0.1 Atlantic bottlenose dolphin (*Tursiops marmoratus*) and 0.1 Harbor seal (*Phoca vitulina*). The Aquarium Dept. reports the birth of 1.0 Epaulette shark (*Hemiscyllium ocellatum*). submitted by Rob Yordi, Sea World of Texas, San Antonio, TX.

Metro Toronto Zoo...reports the following B&H from April through September 1991:

Mammals - 3.0 Reindeer (*Rangifer tarandus*), 0.0.1 Brush-tailed bettong (*Bettongia penicillata*), 0.0.1 Black lemur (*Lemur macaco macaco*), 0.0.3 Common marmoset (*Callithrix jacchus*), 1.1.1 Japanese macaque (*Macaca fuscata*), 1.0 Lowland gorilla (*gorilla g. gorilla*), 2.1.1 African lion (*Panthera leo*), 3.1.2 Cheetah (*Acinonyx jubatus*), 0.1 Snow leopard (*Panthera uncia*), 0.0.1 DeBrazza's monkey (*Cercopithecus neglectus*), 1.0 Patas monkey (*Cercopithecus patas*), 1.0 Sika deer (*Cervus nippon*), 1.0.2 Wood bison (*Bison bison athabasca*), 2.0 Przewalski horse (*Equus przewalskii*), 0.0.1 Barasingha (*Cervus duvauceli*), 2.0.1 Musk ox (*Ovibos moschatus*), 1.0 Masai giraffe (*Giraffe camelpardalis tippelskirche*)

Birds - 0.0.2 Tawny frogmouth (*Podargus strigoides*), 0.0.1 Azure-winged magpie (*Cyanopica cyana*), 0.0.3 Bronze-winged pigeon (*Phaps chalcoptera*), 0.0.1 American flamingo (*Phoenicopterus ruber*), 0.0.5 Red-breasted goose (*Branta ruficollis*), 0.1 Victoria crowned pigeon (*Goura victoria*).

Reptiles - 0.0.22 Reticulated python (*Python reticulatus*), 0.0.5 Florida softshell turtle (*Trionyx ferox*), 0.0.8 Mojave desert sidewinder (*Crotalus cerastes*). submitted by Neil Porter, Chapter Liaison, Metro Toronto Zoo AAZK Chapter, Toronto, Ontario, Canada.

Audubon Park & Zoological Gardens...reports the following B&H - the Reptile Department is pleased to announce the births of 0.0.3 *Sanzinia madagascariensis*, 0.0.5 *Ungaliophis panamensis* from a recently acquired wild-caught female, and 0.0.25 *Epicrates cenchria cenchria*.

The Bird Department proudly announces the following hornbill hatchings: 0.0.3 Wrinkled hornbills (*Aceros corrugatus*) of which 0.0.2 DNS, 0.0.2 Rhino hornbills (*Buceros rhinoceros*), 0.0.1 Celebes hornbill (*Aceros cassidix*), the first of this species to be propagated in captivity. Unfortunately this individual DNS. For their success in captive propagation of these species, the Audubon Park and Zoological Gardens Bird Department won an Edward H. Bean Award at this year's National AAZPA Conference in San Diego. The Bird Dept. also announces the following hatchings: 0.0.5 Abdim storks (*Ciconia abdimi*), 0.0.7 Micronesian kingfishers (*Halcyon c. cinnamomina*), 0.0.2 DNS, and 0.0.6 Guam rails (*Rallus owstoni*), 0.0.2 DNS.

The Mammal Department announces the birth of a female Sumatran orangutan (*Pongo pygmaeus abelii*); the seventh born at Audubon. She has been pulled for hand-rearing due

Births & Hatchings, *Continued*

to the inexperience of her mother. *submitted by Pamela Barker, Secretary, Audubon AAZK Chapter, New Orleans, LA.*



One of two Toco toucans (*Ramphastos toco*) hatched 2 July 1991 at Sea World of Florida. (Photo courtesy of Sea World of Florida)

Sea World of Florida...a notable first at Sea World, the hatching of 0.0.2 Toco toucan (*Ramphastos toco*) took place on 2 July 1991. The parents, both imported birds, were moved to the back area off-display in September of 1990 to encourage breeding. Their flight measures 18' x 6' x 10' and is sparsely planted. Both went immediately to the task of defoliating the plants to their liking, but in the end only played havoc on the plants that they could reach from the perch. A plywood nestbox 13" x 13" x 70" was placed in one corner of the exhibit. Several months went by and they showed little or no interest in the box so it was

Births & Hatchings, Continued

moved to another corner, slightly more remote. At that same time we nailed some old palm tree bark on the front of the box to simulate a natural log and slightly enlarged the entrance hole. We had previously filled the nestbox with pine chips stopping approximately 12" from the nest entrance. The pair quickly developed an interest in the box and began spending a lot of their time inside. They hauled out nearly a foot of the shavings during this time. On 21 June two eggs were discovered and the nest was not disturbed after that time. Both parents shared incubation and on 8 July chick vocalizations were heard coming from the nest. The following day we were able to check the nest and discovered two chicks.

Their usual diet of soaked monkey chow, Promix® dog food, catfish chow, diced fruit (cantaloupe, apple, banana, grapes, blueberries, mango and tomato) was fed with the addition of pinkie mice. Three food pans were offered daily each with four pinkies. Also, an aquarium with live crickets was placed inside the aviary. As soon as a pan was placed inside the aviary, one of the adults would snatch up a pinkie and after working it over for several minutes, would disappear into the box for 10 to 15 minutes. Because they were first-time parents, we wanted to minimize disturbance and did not regularly check the nest. On 15 July one chick was discovered missing. The remaining egg was pulled at this time and candled infertile. The surviving chick was healthy and strong.

The chick was removed from the nestbox on 31 July when it was 23 days old and fledged out by hand. It weighed in at 355 grams when it was pulled. We continued the same diet that we had fed the adults. The weight gain from this point ranged from 5 to 8 grams daily. Initially the chick was placed in a rubber tub with a wood shavings substrate and a heating pad under one end of the tub. On its 36th day the chick began perching on the side of the tub and it was moved to a cage. At 42 days old the chick began eating on its own. *submitted by Anita Schiavoni, Aviculture Supervisor, Sea World of Florida, Orland, FL.*

Los Angeles Zoo...reports the following B&H for September and October 1991:

Reptiles - 4 Rough green snake (*Opheodrys aestivus*.)

Birds - 1 Palawan peacock pheasant (*Polyplectron emphanum*) endangered, 1 West African crowned crane (*Balearica pavonina pavonina*), 2 Congo peafowl (*Afropavo congensis*) endangered/very rare, 1 Common trumpeter (*Psophia crepicans*), 1 Pink-necked green pigeon (*Treron vernans*), 1 Magpie robin (*Copsychus saularis*).

Mammals - 4 Vampire bats (*Desmodus rotundus*), 2 Kuhl's marmoset (*Callithrix kuhli*) endangered, in 1981 included as subspecies of *C. penicillata* but further research in 1987 shows it to be quite distinctive and possibly in its own species status; 0.1 Sable antelope (*Hippotragus niger*), 0.1 Speke's gazelle (*Gazella spekei*) endangered, 0.1 Greater kudu (*Tragelaphus strepsiceros*), 0.2 Gerenuk (*Litocrocanus walleri*), Europeans first discovered it in 1898 but it was represented in Egyptian paintings from 5600 BC; 0.1 Celebes crested macaque (*Macaca nira*), 1 De Brazza guenon (*Cercopithecus neglectus*), 0.1 Red-crowned mangabey (*Cercocebus torquatus torquatus*) endangered, 0.1 Masai giraffe (*Giraffa camelopardalis tippelskirchi*) - Twiga is being hand-raised after she failed to nurse properly.

We are expecting the arrival, momentarily, of a Sumatran rhinoceros (*Dicerorhinus sumatrensis*). They are the smallest of the rhinos, hairiest, carry two horns and are the most primitive and endangered. *submitted by Lois Carwile, Chapter Liaison, Los Angeles Zoo AAZK Chapter, Los Angeles, CA.*

Bronx Zoo...the Chapter has the following significant B&H to report for the remainder of the summer through Fall 1991.

Mammal Dept. - 3.0 Chilean pudu (*Pudu pudu*) were born in late July and August. These small South American deer are rare in the wild so each captive birth is significant. 0.0.2 Rodriguez flying foxes (*Pteropus rodicensis*) were born at the World of Darkness during September. The Bronx Zoo is one of the few U.S. zoos to have a breeding colony of

Births & Hatchings, Continued

these rare bats. Another Slender-tailed cloud rat (*Phloeomys pallidus*) was born in October. This has been the fourth one born in the park. Not much is known about the habits of these large, unusual rodents. 0.0.2 Prevost's squirrels (*Sciurus prevosti*) were born in October. This is the second litter to be produced by our breeding pair. The first litter, produced while the pair was outside on exhibit during the summer, did not survive. This second litter was produced while the pair was in their winter quarters in our holding area. *Mammal section submitted by Peter Psilles, Bronx Zoo, Bronx, NY.*

Birds - some significant hatchings back from July was 0.0.1 Guire cuckoo (*Guire guire*). This hatching is a first for our zoo. The species is not usually kept in North American institutions. Another first hatch was 0.0.2 Vereaux's amethyst starling (*Cinnyricinclus leucogester*). The chicks are being parent-reared. 0.0.1 Chilean flamingo (*Phoenicopterus chilensis*) hatched at the Aquatic Bird House. We had at least five nesting pairs despite the construction going on near their exhibit. 0.0.2 Guam rails (*Rallus owstoni*) hatched at the Propagation Building. These two chicks add to the string of offspring from a previously unrepresented founder. *Bird section submitted by Doug Piekarz, Bronx Zoo, Bronx, NY.*



ZIDP

THIS IS IT!

THE TIME IS NOW!

ZOO INFANT DEVELOPMENT PROJECT



AAZK
AMERICAN ASSOCIATION OF ZOOKEEPERS

I just returned from Dallas where I had a chance to talk with the Zoo Veterinary Technicians during their annual conference about the Zoo Infant Development Project and its significance to animal health. With the Zoo Vet Tech and the Zoo Keeper annual meetings both being held in San Diego in October '92, I have decided that would be a good target deadline for submitting ZIDP data collection forms.

Please make this the year you participate!

Note:

Winter is a great time to review births from last spring and summer and fill in forms.

Exhibits which contain infants could be easily monitored if a clipboard was mounted or hung nearby.

The Data Collection Form does not have to be fully completed to provide important information.

Information should be collected until **one** of the following occurs: Animal is removed from group; Animal is weaned; Animal dies; or information on Form is listed by age (i.e. Gorilla/birth to 6 months, Gorilla/6-10 months, Meerkat/2-6 weeks, etc.)

This is your chance to have yourself and your zoo listed as participants in this important National AAZK project.

This project section is on PARENT-REARED MAMMALS ONLY.

DEADLINE FOR SUBMITTING DATA IS OCTOBER 1992.....

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2. Photographs for entry must be received by Boomer Ball® before 20 January 1992.
3. 100 individual animal winners will be chosen, and the winning institutions will be advised by 10 February 1992.
4. A list of winning animals will be published in the March 1991 issues of Animal Keepers' Forum and Animal Finders Guide.
5. Each photograph entered must have attached the following information:

- a. species
- b. name of the animal
- c. name and title of the person submitting entry
- d. name of institution or private facility owning the animal and the address.
- e. permission or prohibition for use of institution name in future Boomer Ball® advertising.
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From the Editor

My apologies for any confusion the Note from the Editor printed in the November issue of AKF may have caused. One of the real hazards of always working one to two months ahead on a project is the possibility of inadvertently mixing up your dates. This was the case when, in October, I was writing the article for the November issue. It stated that the Overview as well as an order form for Conference Proceedings would appear in the November issue--it should have said the December issue. The Overview does appear in this month's issue and the Order Form for the Proceedings can be found on page 377. The Order Form will again appear in the January 1992 issue of AKF. If you are interested in obtaining a copy, check out the order form which lists the papers to be included, pricing information, deadlines for ordering, etc.

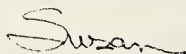
A number of changes are going to be occurring in AKF in the coming months. Some will be major, others not quite so earthshaking, but we hope all of these changes will help improve the quality of the journal and make it more responsive to the desires of the membership. Beginning next month, each issue of AKF will have a Table of Contents at the beginning of each issue. Also beginning in January, papers submitted which are of a technical or research nature will be submitted to a referee for review before publication. Approximately 40 individuals from zoos across the country have agreed to serve as referees for AKF. This review process will not pertain to all material submitted for publication, but will be utilized for those articles of a technical or research nature.

One suggestion brought up in the open meetings in Toledo and which the editorial staff proposes to try is to occasionally have an issue dedicated to a particular topic. This can only work if we have input of materials from you, the membership. We are now soliciting articles on the following three topics: Hoofstock (all aspects), Hand-rearing (techniques, case histories, etc.), and Enrichment (all aspects). We would like to be able to run dedicated issues in April and August. These are, at present, only tentative time frames and will be dependent on how much material we receive.

We encourage all members to submit material at any time and on any topic of interest to zoo keepers. We know many of you have good information to share with your colleagues, but may feel you don't have enough for an entire article. Don't let that stop you--we are proposing to begin a column of shorter informational pieces, including information on such things as husbandry techniques, exhibit furniture ideas, tools that help the zoo keeper do their job better, etc. We also want to start a column dealing with tips and ideas for enrichment in captive exotic animals. Look for more information on these two columns in the January 1992 issue. We will also be making some changes to the Births & Hatchings column including how information is submitted. More on this later.

In conjunction with Associate Editors Gretchen Ziegler and Kayla Grams, I am working on setting up new guidelines for paper submissions to AKF. We are also working with local artists to formulate criteria for artwork submitted for the cover of the journal. As soon as these are completed, they will either be published in AKF or made available to those interested through AO.

I would personally like to thank the membership for their support of and participation in AKF during 1991. The journal could not exist without your input and can only improve and evolve with your continued support. Please let us hear from you if you have suggestions, comments, etc.



Susan D. Chan
Editor AKF



1991 Conference Proceedings Order Form

If you are interested in obtaining a copy of the Proceedings containing the papers presented at the 17th National AAZK Conference held in Toledo, OH, you will need to fill out and return the form below no later than 10 February 1992. All orders must be prepaid in U.S. Funds Only. Allow 4-6 weeks following deadline for receipt of publication. Prices are as follows:

AAZK Member	\$10.00
Non-Member	\$15.00

Postage for U.S. orders is included. Canadian and overseas orders should add \$3.00 for Air Mail postage to Canada and Surface postage elsewhere. Overseas orders wishing Air Mail service should add \$10.00. Make checks payable to AAZK, Inc.

Note: Individuals who presented papers at the Conference and submitted a manuscript for inclusion in these Proceedings will receive a gratis copy. If a manuscript was not submitted, a gratis copy will not be sent, and those individuals will need to order a copy.

The following papers are included in these Proceedings: Sustaining Captive Primate 'Natural' Behavior Via Psychological Enrichment ~ On the Ground Conservation That Really Works: Preakness Clean-up 1991 ~ Cano Palma Biological Station ~ Keepers Helping Keepers Across the World ~ The Evolving Role of the Zoo Keeper ~ The Evolution of Conservation in Zoos and Aquariums: The Ecosystem Survival Plan ~ Breeding & Handraising the Blue and Gold Macaw in Northern Climates ~ The Role of Zookeepers in Wildlife Conservation ~ The Keeper - The Resource or Toad on the Road, the First, and so far only, Amphibious Rock Hit Single ~ Hand Rearing Maned Wolves at the Louisville Zoo ~ Treating Periodontal Disease in the Lesser Bushbaby ~ An Inexpensive Mechanical Restraint Device at the Milwaukee County Zoo ~ The Pancake Tortoise and Its Eggs ~ Introduction of the Indianapolis Japanese Macaque Troop ~ Behavioral Training of a Llama Herd ~ The Red-bellied Lemur in Captivity ~ A Video ADT Goes to Sacramento ~ Use of Fecal Steroid Analysis in Sex Determination of Cranes and Psittacines ~ Management and Behavior of the Rodrigues Fruit Bat ~ Environmental Enrichment Methods: A Workshop for the Primate Keeper ~ The Evolving Role of the Zoo Keeper ~ Project Puffin.

Proceedings Order Form

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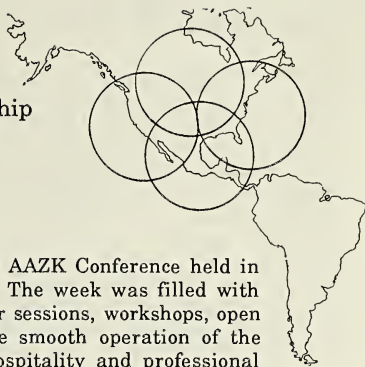
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TO: Chapters and General AAZK Membership
FROM: Mark de Denus/LINK Coordinator
SUBJECT: LINK Update



As you are all probably aware, the 1991 National AAZK Conference held in Toledo, OH in October was a wonderful success. The week was filled with scheduled programs and events that included paper sessions, workshops, open forums, meetings, tours and entertainment. The smooth operation of the conference week was accentuated by the kind hospitality and professional concern of the Toledo Chapter delegates. I would like to commend the Toledo Chapter for its outstanding accomplishment of providing a most successful and complete program and, personally, for the concern and care which was extended to me during my visit.

I would encourage you to read the Overview of the 1991 Board of Directors Meetings as published in AKF. This gives a very good review of the current status of all AAZK projects, committees and general items. It will let you know what the Association is involved in and, perhaps, give you some ideas of where you might like to get involved. I want to draw your attention to a few specific areas and address a few issues.

In regard to the status of Chapters: each Chapter **may not** consider themselves non-profit entities at this time. The Group Exemption Letter was filed with the IRS in July 1991, and until this application has been processed and approved, U.S. Chapters are not entitled to 501(c)(3) coverage. Canadian Chapters will be sent specific information regarding their responsibilities as required by Revenue Canada.

Chapter rechartering will be commencing in January and I encourage each Chapter to be prepared and in compliance with the required process. The fiscal year of each Chapter should run January to December. The terms of Chapter Officers should run for this period also. The Financial Statement of the Chapter should reflect the fiscal year of 1991.

A Recharter Package will be sent in the new year. It will contain a Recharter Application, Agreement and Financial Statement. There will be changes in the Recharter fees for Chapters. Information regarding this will accompany the recharter package (also, review the Minutes of the Board of Directors Meeting in this month's AKF).

All Chapters should have a standardized Constitution at this time. The General Articles are mandatory; the Articles of Bylaws should be modified and customized to meet the needs of each local Chapter. A Copy of the Chapter's by-laws must be sent to the LINK Coordinator for my file.

I would like to announce the appointment of new Regional Coordinators for the LINK system. They are Timothy Hill for Minnesota, Jeannie Frazier for Mississippi, Gretchen Ziegler for Kansas and Wayne Hazlett for Wisconsin. Dan Powell will assume the RC duties for Michigan as well as Indiana.

In Toledo I had the opportunity to attend a meeting of the Great Lakes Regional Liaison Council (RLC). I want to say that this is a most effective way of meeting, discussing, cooperating and supporting each other as members and as Chapters. Many issues can be discussed and resources (ideas and materials) can be pooled to help ensure the success of projects or events. I would like to take this opportunity to commend the Chapters and members of the Great Lakes region for their participation in the National AAZK Conference, and, specifically, the AAZK Chapters of Detroit, Columbus and Greater Cleveland Zoos for their sponsorship of breaks during the Conference week.

I invite all Chapters and AAZK members to become more involved with our Association. Participation in projects such as Zoo Infant Development Project, Exhibit Design Form Project or other National projects; involvement on AAZK committees (By-laws, etc.); Chapter projects and products; articles for publication in *AAZK*; presentations at conferences and workshops; many avenues are available for your participation. Another way, and possibly the most critical for the success of the organization, is direct communication and dialogue between the membership and the administering arm of AAZK. Any ideas, concerns or problems should be addressed, in writing, to the appropriate level. This may be through your Chapter Liaison, Institutional Liaison, Regional Coordinator, LINK Coordinator, Committee Head, *AAZK* Editor, Administrative Secretary or Board Member. All are available to deal with the ongoing activities of this Association; an Association that is and must grow and evolve at an accelerated rate to meet the demands of our roles as dedicated animal care professionals.



A Chapter Shows Its Support

By
Johnny Merk, Chapter Member
Exotic Feline Breeding Compound
Rosamond, CA

Recently, there has been concern over funding for the National AAZK organization. In a past *Forum*, there were several suggestions offered to increase revenues that would allow the normal operation and functioning of AAZK to continue. Individual Chapters were invited to vote on which idea they felt was best or to offer suggestions of their own.

Our Chapter, made up of members who work at the Exotic Feline Breeding Compound in Rosamond, CA are looking at an alternative idea that would supplement AAZK revenue without hardship to individuals or Chapters that would occur if proposed dues increases are implemented.

Many local AAZK Chapters hold fundraising events that generate money for various projects, i.e. Bowling for Rhinos. If a small percentage of the funds raised from these local events were to be donated directly to the National AAZK, they would be a supplement to current revenues and could possibly negate the necessity for increases in membership dues.

The proposal that is currently being considered by our Chapter is that 5% of all fundraising events be given to the National organization. These monies could be ear-marked for several projects which are currently on hold because of the lack of funding available.

We all know that animal keepers are under-paid, over-worked and never really seem to get the credit they richly deserve for their efforts. That is why there is a National AAZK - recognition of our fellows and their dedication.

The National AAZK is a medium of communication, fellowship and understanding that bonds all of us across the country and around the world. Without AAZK, we sink back into the grayness of obscurity and futility. Joined together, we are seen as responsible, dedicated and caring professionals.

We, at the E.F.B.C., are interested in building a force of commitment and effort by supporting the National AAZK. In this endeavor, we are strengthening ourselves and our fellows.



More Reflections on Peru

Part 2

By
Robert Bergahaier, Mammal Foreman
Philadelphia Zoological Society
Philadelphia, PA

In '83 I had found Cuzco a bleak and dirty city. Like my experience with Lima, I found Cuzco better the second time around. I got out and hiked the Inca ruins around the city. I was fascinated with the architecture and the history of the city and its sacred valley, once the capital of a huge and well-populated empire. I would find out more about these people later.

Before I had left I contacted Dr. Bernie Peyton, the spectacled bear researcher, on where I might find the bears or the Andean deer near the Cuzco area. To get to an area where the bears are found meant mounting a minor expedition, so I decided to concentrate on the deer locally called taruka and more commonly, the huemel. Bernie suggested that I might find taruka in the mountains outside of Ollantaytambo. He also suggested that I contact an American expatriot named Robert Randall who lived there. I never did find taruka but my conversation with Randall proved one of the highlights of my trip.

Randall's expertise was in reconstructing the culture and the ecology of the Incas. Destroyed by the Spanish in the 16th century, the Inca Empire had a magnificent civilization that stretched hundreds of miles along the Andes. Randall believed that the Incas were the most ecologically developed society the world has ever seen. Their empire fed, sheltered and clothed over 40 million people in a harsh, cold, high altitude desert. The modern nation states of the Andes support a fraction of those numbers in the same terrain. Under the Incas, wildlife populations were allowed to thrive with periodic mass hunts to control their size. In spite of the present lower human population, the area is now under severe ecological pressure and many wildlife species such as the taruka, bears, puma, vicuna and guanaco are in danger of local extinction.

Randall told me that the taruka might be found above the Quarries across the river from the town. The Quarries are a natural avalanche pathway under a sheer wall of rock. This area was used by the Incas who had an ingenious method of obtaining building material from the area. The Incas would select a manageable section of rock and chisel it into a shape they could use. The slab was then pulled into the well-worn avalanche path and pushed to start its way down. After tumbling downhill, the slabs would arrive near the Urubamba River where they were ferried across. Most of the stone of the Quarries was used to construct the town of Ollantaytambo and its fortress.

It was at times a hot, steep climb into the quarry area and I took three day trips there. One afternoon I saw a condor gliding high over the mountains. Another morning I saw a large falcon, and on another hike a pair of golden eagles flying together making sharp twisting turns in their mating ritual. The views from the quarries were spectacular. I found two huge stone slabs that looked as if they were waiting to be pushed into the valley below. I came upon them unexpectedly and I had a feeling as if I had stepped back in time.

My next stop was the southern Peruvian city of Arequipa. While Lima is a cosmopolitan center, and Cuzco seems so Incan, Arequipa is very Spanish. The city is located just below the high Andes in the dry western foothills of the range. It is a city of white buildings constructed out of a pearl-colored volcanic rock. The residents of the city have a great loyalty and chauvinistic pride in their Arequipa. The week I was there coincided with the town's anniversary celebration. I was told that the celebration of Arequipa's founding is more spirited than the Peruvian Independence festivities in the city. Towering above the city is the 15,000 foot extinct volcano El Misti. Except for Mt. Kilimanjaro in Africa, I have never seen such a strikingly isolated peak.

More Reflections on Peru, Part 2, Continued

Arequipa forms a convenient base to explore three spectacular natural areas found in this southwestern corner of Peru. The first area is the Laguna Mejia found on the Pacific coast drive of two hours from Arequipa. During the months of December through February Mejia forms one of the most important refuges for migrant shorebirds from North America. Since I was visiting Mejia out of season, I was warned not to expect the immense concentrations found during the migrations. I did however find large numbers of waterbirds which included Bahamain pintailed ducks, Argentinean shovelers, and South American ruddy ducks. There were also large flocks of coots and grebes and some Chilean flamingos. On the beach side of the lagunas were pelicans, boobies, and grey gulls. In spite of it being out of season, I thought the concentrations of birdlife were impressive. The Lagunas are managed as a National Reserve and the World Wildlife Fund is trying to raise funds to acquire more of the area to protect it from development.

Just outside the eastern limits of Arequipa is another National Reserve, one of the largest in Peru. The reserve protects some of the larger Andean mammals whose populations were heavily hunted almost to extinction. The reserve also protects several large saline lakes with large populations of flamingos. The Lagunas Salinas is the most accessible from the city and can be reached in a few hours. The drive to the lakes is a series of switchbacked roads which wind way up to almost 12,000 feet. It is an incredible drive. The area around the lake is used for raising llamas, and herds of them graze around the lake. The three species of flamingos of the Andes are found here. I could easily identify the Chilean and Andean species, but I was not able to differentiate the James flamingos from the Chilean. I estimated that the lake contained at least 5,000 birds. By moving slowly I managed to get a hundred yards from the flocks near the shore.

In another area of the Reserve, small groups of vicuna graze near the road. I saw these and managed to find a local who knew where guanaco could be found. Guanaco in Peru are probably more endangered than vicuna and certainly less easy to observe. My driver dropped me at the end of a ridge just off of the road, and said that guanacos could be found nearby. Rather skeptical, I started climbing the ridge. Shortly after I started I heard the horse-like whinny familiar to guanaco keepers, and I looked up. There on the edge of the ridge was a large guanaco watching me. As I drew closer to the guanaco it stepped back a bit, using the ridge line to shield its body. As I came nearer the animal covered more and more of its body until only its head was exposed. I had never realized before that the long neck on guanacos and other new world camels functions as a sort of periscope, allowing the animal to peer over objects while protecting its body.

I wanted to get a better look at the guanaco so I started to circle around the ridge to approach it from behind. That movement proved successful and I found another guanaco that was on the other side of the ridge line. This maneuver also had the added bonus of placing me within a colony of vizcachas. The vizcachas is a rabbit-sized rodent that looks like a giant chinchilla to which it is closely related.

The last area I visited near Arequipa was the Colca Canyon. Throughout the city there were advertisements for day tours of the canyon. In typical tourist hype, they promised that a tour of the canyon would reveal spectacular sights that would astonish the visitor. For once, the hype was correct. The fifteen hour tour that I took was one of the most intense travel experiences I have ever had. The tour started off in a bus with 20 other tourists. It climbed up in the Andes and reached places that were at least 15,000 feet in altitude. It seemed as if we were on the roof of South America, and I guess in some respects we were. We passed groups of vicuna, and domestic herds of alpaca and llama. The bus even stopped for a time at a roadside colony of vizcachas. Several small marshes were also near the roads and on these were nesting pairs of Andean geese, ibis, and gulls. Occasionally, Andean flamingos were spotted along with other high altitude birdlife. Once we spotted a half dozen Andean condors soaring together above the road.

To reach the canyon we had to make a rapid change in altitude going down 5,000 feet in a half hour. It is a sensation somewhat similar to being on a slowly descending roller coaster. The road hugged the edge of cliffs. A set of bad brakes would be fatal here. The Colca Canyon is reported to be the deepest in the world. Though the Grand Canyon of

More Reflections on Peru, Part 2. *Continued*

Arizona is wider, the Colca is much deeper. We drove several hours along the south edge. The scenery is spectacular and you do see an incredible diversity of sights. There are Pre-Inca and Inca ruins scattered along the road, along with ancient burial tombs and rock pictographs. You also pass through Spanish-built villages that seem unchanged from when they were first created. The Colca area is subject to many earthquakes and some of the fault lines can be seen from the road. Where the canyon is its deepest you can see the mountain that is the recognized source of the Amazon River. For the naturalist the place of most interest is an area of the canyon called the Place of the Condors. This area is known for its concentration of condors as well as other raptors. Here you can observe condors soaring at eye level as they ride the thermals that rise up from the canyon's floor. It is a very impressive sight. After the trip you are exhausted both physically and mentally. However, I am not sure if there is another day-long excursion anywhere in the world during which one can see so much. The trip, including lunch, cost \$15. Now that was truly amazing!

I managed to see a lot during my four weeks in Peru. Compared to Africa and Asia, Peru is an inexpensive destination. Independent travel is not difficult if you avoid the peak travel months of July and August. A knowledge of Spanish really facilitates a Peruvian trip and is essential if traveling on your own. Would I go back again? Well, on this trip I found out that you can see a lot of wildlife rafting down the Tambopata River, and I found out where tarukas can be found outside Arequipa, and.....



AAZK Publications Available

AAZK Diet Notebook, Mammals, Vol. 1-contains approximately 325 diets representing 213 species and subspecies from fourteen participating institutions. The diets are arranged by taxonomic order using ISIS numbers in a durable and attractive three-ring binder. Each Diet Response Form included in Volume 1 contains the following information: common name, scientific name, ISIS number, the contributing individual, their institution and its address, how long the diet has been used, whether the animals have bred while on the diet, the diet ingredients, instructions for preparation, notes and remarks, special considerations and nutritional analysis (if available). Cost is as follows: 1) AAZK Members \$40.00; 2) Non-members \$55.00; 3) Institutions \$70.00. These prices represent prepaid order prices and include postage for the U.S. and Canada. Those placing orders from overseas should contact AAZK Administrative Offices for additional postage charges. Please allow 4-6 weeks for delivery. Make checks payable to "AAZK Diet Notebook" (U.S. FUNDS ONLY).

Zoonotic Diseases, 2nd Edition-this 40-page reference work details the most common zoonotic diseases, offers guidelines for preventive control and covers personal hygiene and disinfection procedures. Information on each disease is presented in a text format which includes Ethiology Agent, Means of Transmission to Man, Global Distribution, Alternate or Intermediate Hosts, Human Incubation and Human Symptoms. Editor of this volume is Bruce Clark of the Toledo Zoo. Prices are: 1) Professional Members \$5.00; 2) Other AAZK Membership Categories \$6.50; 3) Non-members \$8.50. These prices include shipping and handling within North America. Orders outside of the U.S. and Canada should add \$3.00 for foreign postage by Air Mail. Make checks payable to "AAZK" in U.S. FUNDS ONLY. Please allow 3-4 weeks for delivery.

**For either publication send complete mailing address and check or money order for correct amount to: AAZK, 635 Gage Blvd., Topeka, KS 66606 U.S.A.
ALL ORDERS MUST BE PRE-PAID**

OVERVIEW OF 1991 BOARD OF DIRECTORS' MEETINGS

*submitted by Barbara Manspeaker, Administrative Secretary
and Susan Chan, Editor Animal Keepers' Forum*

The meeting was called to order on 5 October at 9:30 a.m. by President Oliver Claffey. Current Board Members present were: Oliver Claffey, Bob Debets, Janet McCoy, Ed Hansen and Frank Kohn. Newly elected BOD members Rachel Rogers, Mark DeDenus and Ellen Bradfield, who will assume their offices on 1 January 1992, sat in on these meetings. Also in attendance were Barbara Manspeaker, Administrative Secretary, who served as recording secretary, and AKF Editor Susan Chan. The Board of Directors met in closed executive session on 5 October and held open Board meetings to which all members were invited on 6 October 1991. All current Board Members as well as the incoming BOD members mentioned above, were in attendance at the open Board meeting. The following is a synopsis of what transpired at both meetings.

Administrative Offices - report submitted by Barbara Manspeaker

It was reported that as of 31 August 1991 we had 2,586 members broken down by category as follows: Professional - 1,397; Affiliate - 764; Associate - 285; International - 50; Contributing - 44; Life - 15; Exchange - 19; and Complimentary - 12. The total represents a decrease of 32 members over what was reported last year at conference time. We have lost members in all paying categories except for the Professional category. Membership is our major source of revenue so Barbara stressed the need to explore ways of increasing these numbers.

The financial statement was submitted to the Board. Total revenue from 1 January 30-August 1991 was \$171,106.60 while expenditures for the same period totaled \$146,822.37. This financial statement reflects all AAZK accounts. This statement is misleading due to the fact that it reports our revenue exceeding our expenses by \$24,284.23. To get the clear operating expenses for AAZK, Inc., one must first deduct all revenue in the Video Tape Project, Diet Notebook, and Bowling for Rhinos accounts as these funds are not part of the general operating budget. The combined revenue from these items is \$110,154.98. If one subtracts this amount from the total revenue figure one will arrive at a figure of \$60,951.62. This is AAZK's true revenue figure for its actual operating costs. On the expense side it works the same way. Subtracting all expenses related to Diet Notebook and Bowling for Rhinos, the figure for these line items is \$76,372.37. Subtract this amount from \$146,822.37 and you have the true total operating expenses of \$70,450.00. With AAZK's operating expenses of \$70,450.00 and its operating revenue of \$60,951.62, this leaves the Association with its expenses exceeding its revenue by \$9,498.38. Some areas in which the Association has experienced an increase in expenditures are: telephone, legal and accounting, maintenance of office equipment, committee budgets, and accessory reorders (logo patch reorder for inventory). The 800 number was installed as a benefit to the membership. However, average telephone bills have increased from \$62.10 in 1989 to an average monthly bill of \$467.52. Following discussion the Board decided to monitor expenses for the 800 number until their mid-year Board meeting. As of the report date the balance in the AAZK, Inc. checking account was \$759.93 and the balance in our Money Market account was \$4,627.51. (Financial statements for the Diet Notebook and Training Videotape Accounts which are held at Administrative Offices (AO) will be discussed under their specific committee.)

The following revenue generating proposals were discussed and approved by the Board:

1. Raise the Chapter Recharter Fees to the following levels:
 - 1 - 10 Chapter Members - \$50.00
 - 11-20 Chapter Members - \$75.00
 - Over 21 Chapter Members - \$100.00
2. Make immediate fund transfer of \$2,500.00 from the Video Tape Project account into the Association's general operating fund.

Overview of the 1991 Board of Directors' Meetings, Continued

3. Proclaim 1992 as the "Year of the Association" and ask that every Chapter hold one fundraiser with the express purpose of sending a minimum of 75% of monies raised to be deposited in the Association's general operating budget.
This proposal will be implemented through the LINK System.
4. The costs for printing Biological Values III will be paid for from funds in the Diet Notebook account.
5. Effective January 1, 1992 membership fees for all Canadian members will be increased by \$5.00 to cover increased costs of mailing AKF to Canada.
6. Monitoring proposed increases in non-profit postage fees to determine if a minimum 10% increase in U.S. membership fees will be necessary in the future.

We currently have 67 active Chapters in AAZK. The most recently formed are the Memphis Zoo AAZK Chapter, Memphis, TN; Dallas Zoo Chapter of AAZK, Dallas, TX; and Caldwell Zoo AAZK Chapter, Tyler, TX. Santa Fe Community College Teaching Zoo and Birmingham Zoo have both applied for Chapter Charters. The Administrative Office has completed all paperwork necessary for filing for the Group Exemption Letter (GEL) from the Internal Revenue Service that will grant all individual Chapters non-profit status. The completed application was mailed on July 17, 1991. Until AAZK is granted this Group Exemption Letter, Chapters may not consider themselves non-profit entities. The 501 (c)(3) status only covers the national body until the GEL is approved. Canadian Chapters must comply with the regulations of Revenue Canada but are not covered under the regulations which govern U.S. Chapters.

Results of the Membership Preference Poll published in the June, 1991 AKF were discussed. This poll was conducted to determine membership support for various avenues of funding for membership services including the membership directory and conference proceedings. The Administrative Office received 123 responses from approximately 2,500 surveys mailed (5% response rate). Of the revenue-generating options presented, the following shows how respondents voted (some respondents voted for more than one choice):

Chapter Tithing - 22
CPR Administrative Costs - 12
Chapter Recharter Fees - 61
Publication Subscription Fee - 88
Membership Dues Increase - 37

At the time of the poll the membership was told that if a less than 25% response was received, the Board would have to consider discontinuing the printing of both the membership directory and conference proceedings. An alternative method of handling the membership directory was discussed and is explained later in this overview. Future possibilities for conference proceedings publication are discussed under the AKF report.

Members who did not attend the 1991 National Conference were offered the opportunity to vote by proxy this year on the amendments to the by-laws. This practice will be continued.

It was reported that the AAZK personnel are now bonded employees. Also, in compliance with Chapter requirements, the AAZK Inc. banking accounts now require two signatures.

A \$500 annual budget was approved for the President of AAZK with an additional \$500 budget for remaining Directors.

Animal Keepers' Forum-report submitted by Susan Chan

Susan reported that 1991 marked the 18th year of continuous publication for AKF. This time period's editions averaged 39 pages per issue. The index for the 1991 AKF will appear in the January, 1992 issue. The index is again being compiled by Woodland Park Zoo volunteer Pam Talbot. The AKF continues to be printed on recycled stock.

Overview of the 1991 Board of Directors' Meetings, Continued

Advertising revenues for the reporting period were \$1425.00 (down \$530.00 from last year's report). Advertising materials were sent to 15 potential advertisers during the period. It was moved by Joe Rindler, Columbus Zoo, and approved for an AKF advertising committee to be formed to seek out potential advertisers for 1992. It was also suggested that this committee contact conservation organizations to solicit their support in the form of advertisements to help finance the monthly costs of publishing AKF.

During the open meeting it was also suggested that the editorial staff might consider dedicating certain issues to a specific topic and solicit papers in advance for such an issue (example - an issue on education, conservation or husbandry techniques.). Acting on a suggestion from Sue Barnard and Brint Spencer, Susan reported that she is in the process of putting in place a formal review procedure for articles of a more technical or research nature. Letters will be sent to the list of potential reviewers and the process will be implemented early in 1992. Susan also reported on the AKF survey conducted in the March issue of the journal. Response to the survey was 5%, but Susan reported that many positive and constructive suggestions were received and will be incorporated. Beginning in January the AKF will have a table of contents each month. The staff will also solicit the help of several local artists to help screen art submissions.

Susan reported that former Assistant Editor Ron Ringer had moved to San Diego and resigned his position. Topeka Zoo keepers Kayla Grams and Gretchen Ziegler have been nominated and approved by the Board of Directors as Associate Editors for AKF. Among their first duties will be revising the Births and Hatching column format and initiating a column which will include tips and suggestions on husbandry techniques from keepers all over.

Susan expressed some concern about the amount of space taken up in the past six months with committee reports, etc. in relation to the number of husbandry articles published. She noted that from the survey, it was clear that the membership would prefer to see more animal-related articles. In an attempt to open space for articles in AKF and improve communication among Chapter members, the LINK Coordinator will publish a quarterly update regarding the organizational aspects of the Association along with updates from the President of the Association.

At the mid-year Board Meeting in May the publication of the Conference Proceedings for Toledo was discussed. It had originally been decided that beginning in 1991 each Conference Committee would be responsible for printing its proceedings. After further discussion, it was determined that it would be more cost-effective and would allow for greater quality control if the proceedings were published out of Topeka or Canada. The following was decided in regards to the Toledo Conference Proceedings:

1. The Proceedings from the Toledo Conference will be duplicated using high quality photocopy equipment rather than printed at a traditional print shop. Therefore, all authors submitting papers for publication would be required to follow exactly the criteria for paper submission which had been sent to them (i.e. an author's paper will be printed exactly as it is submitted.)
2. The Toledo Conference took place in October. All papers to be included in the Proceedings were to be collected at the conference. (This unfortunately did not prove the case, as many presenters did not turn in their manuscripts at the conference.) Advertisements listing the papers to be included in the 1991 Proceedings as well as pricing information and an order form will be published in the December and January issues of AKF. This ad will be the only way individuals may order the Proceedings.
3. The Conference Proceedings will be published in February and sent to all those who ordered from the ads in December and January. As in the past, those presenting papers and submitting a manuscript will receive a copy gratis. However, since no publication fee was built into this year's registration fee, delegates will also need to order a copy of the Proceedings if they wish to have one.

Overview of the 1991 Board of Directors' Meetings, Continued

4. After the initial printing of the complete Proceedings in February, we will only offer the papers on an individual basis to those wishing to order them. There will be a flat fee charge for each paper ordered. Individuals may then order one or several papers depending on their area of interest. Advertisement of the papers' availability will be published in AKF.

Membership Directory-reports submitted by Ed Hansen and Susan Chan

Because the publication of the Membership Directory has proven to be such a costly endeavor for the Association, it was decided that a new approach would be taken beginning in 1992. The Tucson AAZK Chapter, working in concert with AAZK AO, will develop a database of the membership. They will then print-out a copy of the membership listing by state and/or province and by zoo affiliation. A copy of this will be sent gratis to each active AAZK Chapter. Thereby, Chapter members will have access to a listing of the current membership through their Chapter. Individuals interested in having their own copy, will be able to order it from the Tucson Chapter for a fee to be determined later. More information about how this will be handled will appear in AKF as the time gets closer for the Membership Directory's 1992 printing.

Book Review Committee-report submitted by Melba T. Brown and Tom Aversa

Book Reviews have appeared in AKF since 1985. In March 1991, the AAZK Board of Directors decided to appoint two coordinators. Melba T. Brown, National Zoo, assumed the position of coordinator for general interest topics, and Tom Aversa, Franklin Park Zoo, took on the position for semi-technical and technical topics.

Book reviews have appeared in each month's AKF since February 1991. A number of books are currently being reviewed and will be published in upcoming issues of AKF. A budget of \$50.00 was approved for 1992.

Diet Notebook - report submitted by Susan Bunn Spencer

Since the publication of the AAZK Diet Notebook, Mammals, Vol. I in 1988, collection and processing of diets for Mammals Vol. II and Birds, Vol I has continued. The computer program Paradox 2 is being used. The Section Coordinators are: Debbie Hayman and Ted Strikwerda from the Bowman Zoo, Ontario, Canada, will be sharing the Mammal Coordinator position; Jeff Ettling of the St. Louis Zoo is the Reptile Coordinator; Kelly Westbrook, Little Rock Zoo, is Bird Coordinator; and Susan Kenney, John G. Shedd Aquarium continues as Invertebrate Coordinator. Because the volume on fish diets is not in the production stages, no coordinator is in place at this time. Those wishing to submit fish diets should send them directly to Susan Bunn Spencer care of the AAZK Administrative Office in Topeka. Susan hopes to be able to have Mammals, Vol II and Birds, Vol. I out before the close of 1992. Since only 15 copies of Mammals, Vol. 1 remain in inventory the Board authorized AO staff to have 250 copies printed. The low bid submitted for printing was from Print Management Ltd., Winnipeg, Canada. Bob Debets will deliver the finished books to AO and will be reimbursed for his gas expenses.

The Diet Notebook Project is self-supporting and so has requested no budget from AAZK. The project has sufficient funds in its account to cover the cost of printing this upcoming volume.

Biological Values for Selected Mammals III-no report submitted.

This is a project of the Greater San Francisco Bay Area Chapter under the direction of Toni Danzig. BV III is currently undergoing final editing/indexing prior to publication. Low bid was received from Print Management Ltd., Winnipeg, Canada. Its availability will be announced in AKF in 1992.

Zoo Infant Development Project-report submitted by Harmony Frazier-Taylor

Harmony reported that the data collection form for this project was developed and put into use during 1989-90. Data is currently being gathered and put on computer at Woodland Park Zoo in Seattle, WA. It needs to be stressed that information is being requested for Parent-reared not Hand-reared infants. A budget of \$150.00 was approved for this project for 1992.

Overview of the 1991 Board of Directors' Meetings, Continued

An Approach to Zoo Keeping - report submitted by Pat Sammarco

This project is intended to be a textbook of the basics of the zoo keeping profession. Pat reported that she has purchased a computer and has spent the past year entering already collected sections of the book into the computer along with completing new chapters. Board member Ed Hansen, having reviewed the latest draft, informed the Board that it contained much useful information and was more in line with the format requested at last year's conference. Upon completion and final Board review of the manuscript, Pat was instructed to seek funding and publication sources. A Budget of \$50 was approved for 1992.

Ad Hoc Ethics Committee

The Board decided that beginning in 1992 an Ad Hoc Ethics Committee, which will serve for two years, will be appointed randomly from the professional membership. This committee will address any issues pertinent to its function and will be chaired by the immediate Past President.

AAZK Advisory Council

This council was formed to gather information and make recommendations on topics assigned by the Board. In 1991 the Council consisted of: Rosemary Krussman, Pat Sammarco, Debbera Stecher, Bill Whittaker, and Bruce Wojcik. Items considered by the Council in 1991 included: increasing AAZK revenue, improving Association/member communication, determining National Conference programs, and the problem of member apathy.

Some Council members met with the Board on Saturday, October 5. One suggestion the Board felt would be beneficial was to make Chapters aware of some of the problems being faced by the Association and to solicit the Chapters' input on possible solutions.

Remaining Council members will serve until the mid-year Board meeting when a determination on the Council's future role will be decided.

Nominations and Elections Committee - report submitted by David Luce

David reported during the year 1991 six nominations were received for the AAZK Board election. The nominees were Ellen Bradfield, Zoo Atlanta; Mark de Denus and Bob Debets, Assiniboine Park Zoo; Lois Johannes, Los Angeles Zoo; Rachel Rogers, San Diego Zoo; and Bill Whittaker, Toledo Zoo. Committee members for the 1991 election were: Cherie Langlois, Northwest Trek; Mike Light, Kings Island and Kim Miller, Cleveland Metroparks Zoo.

There were 1,433 ballots mailed and 491 returned. The election resulted in the appointment of three new Board members, Ellen Bradfield, Mark de Denus and Rachel Rogers whose term in office will commence 1 January 1992.

During the open meeting several issues arose regarding the election process. The committee has been directed by the Board of Directors to revamp the entire election process by the mid-year Board meeting in 1992. The Board of Directors has voted to accept the current chair's suggestion of utilizing first class mail to insure delivery of the ballots. David also suggested standardization of ballot size to facilitate counting.

Mike Light, Kings Island, has agreed to serve as Nomination/Election Chairperson for 1992. A budget of \$25.00 was approved.

LINK System - report submitted by Mark de Denus

There are currently 28 Regional Coordinators working the system. There are 7 states unrepresented by RCs: these will be under Mark's oversight until RCs are in place (Alaska, California, Missouri, Mississippi, Kansas, Minnesota, and Nevada).

Eleven resignations of RC positions occurred over this period; 11 new Regional Coordinators were also appointed. Three positions were terminated due to inactivity.

There are 5 Chapters on inactive status and one (High Plains) has dissolved. Mark

Overview of the 1991 Board of Directors' Meetings, Continued

reported there are 135 institutional liaisons. Of the total AAZK membership, approximately 1,100 members (44%) are involved in Chapters.

During 1991 Chapters continued to complete requirements for the Group Exemption process. All Chapters were sent an overview of the Mid-Year Board Meeting in Topeka; information and a copy of the standard Chapter Constitution, approved by the Board of Directors; a copy of the Chapter Project Proposal Form; and a survey form to document past Chapter Products/Projects. Also developed was a package that was sent to new Chapters outlining their responsibilities and requirements.

In regard to how much money Chapters can generate on a yearly basis, the following was derived from the 1990 Financial Statements of Chapters (64 Chapters reporting):

Total income for Chapters: \$376,979.80
Total expenditures for Chapters: \$330,559.58
Average Chapter Income: \$4,835.65

A budget of \$1,000.00 was approved for 1992.

AAZK Manual of Resources - report submitted by Elandra Aum

The purpose of the AAZK Manual of Resources is to provide Chapters with a complete as possible information source on the Association, its programs and projects, how the Chapter system works, ideas for Chapter projects/fundraisers, etc.

A final draft was submitted to the Board for review and following approval, the Manual will be distributed to all Chapters gratis. Individuals or institutions wishing to receive a copy will pay a fee which is refundable if a Chapter is formed within a year of receipt. A budget of \$75.00 was approved for 1992.

AAZK History Committee - report submitted by Rachel Rogers

Rachel Rogers was appointed as Chair of this committee following removal of the previous Chair. It has been proposed to publish the 25th Anniversary Book for sale in conjunction with the National Conference in San Diego in 1992. The Book will include histories of AAZK projects/committees, conservation projects undertaken by AAZK, award winners, early history of the Association, photos of significant people and events in AAZK's history, etc. Input is being sought from present and past committee/project chairs.

Rachel submitted a draft copy of the Book for Board review and was asked by the Board to have the final draft ready by the mid-year meeting in 1992.

The San Diego Zoological Society has agreed to match \$4,000.00 of the estimated \$8,000.00 needed for publication. It is proposed that each Chapter contribute \$60.00 towards meeting the matching \$4,000.00. Rachel stressed the importance of Chapters, Project Heads and any others who have historical material to contribute such information as soon as possible.

A budget of \$50.00 was approved for 1992.

International Affairs Coordinators East and West - report submitted by Pam McDougall and Mona Keith

The Coordinators reported that they have been keeping in touch with AAZK's counterpart organizations abroad during the past year. These include ABWAK, ASZK, AGAZ and the Dutch Zookeepers Association. Journals are exchanged and information on each other's associations has been printed cooperatively. The Coordinators reported that we currently have 54 international members, including the sponsored foreign keepers. There were 18 sponsored foreign keepers and sponsors in 1991. They also reported there are two sponsored keepers from Estonia, Russia and one keeper from Shanghai. The IACs would like to find a contact person in Africa who could recommend candidates for sponsorship. They still have a list of foreign keepers awaiting sponsorship by an AAZK member or Chapter.

The IACs initiated a new column in *AKF* called International News. This column reports items from zoos around the world. A budget of \$50.00 was approved.

Overview of the 1991 Board of Directors' Meetings, Continued

By-laws Review Committee

The proposed revisions were published in the June 1991 *AKF* and comments from the membership were solicited. A major portion of the revisions focused on Chapters (Article VIII) and came about as a direct result of the Association's new nonprofit tax status. Other areas of revisions included: Article II, Membership; Article III, Elections/Appointments; and Article IV, Meetings. A proxy ballot was provided with the published by-law revisions for those members who could not attend the Toledo conference.

At the open board meeting, the proposed By-law revisions were discussed and further explanation was provided. In order to clarify the meaning of "Personal Gain" in Article II, Section 8d, the following wording was added:

"Personal gain shall be defined as use of monies, properties (real and personal), personnel, or Association offices or facilities for non-AAZK business."

The newly approved by-laws will be published and will be available to members in early 1992. The Board is currently seeking a Chairperson and committee members for the By-laws Review Committee. A budget of \$25.00 for postage expenses was approved.

Conservation, Preservation and Restoration Committee-reports submitted by Norman Gershenz (ESP) and by Nanci Pintavalli (BFR)

The Ecosystem Survival Plan (ESP) is that portion of the CPR committee dedicated to raising funds for preserving endangered habitats. This is accomplished through several avenues including the Adopt-an-Acre (AAA) Program and the Conservation Parking Meters (CPMs). From January 1, 1991, through September 15, 1991, \$32,784.82 was raised from AAA deeds sales; \$8,294.95 was raised at the Preakness Clean-Up event. During this period 465 deeds were mailed to donors.

As of September 7, 1991, \$26,595.82 has been raised from the two prototype CPMs located at the San Francisco Zoo and the National Aquarium at Baltimore. In addition, four zoos have entered into agreements with AAZK, Inc. to install meters at their facilities. During 1991, Norm reported that ESP and the parking meters have received very favorable media coverage. Rosemary Krussman, National Aquarium was appointed ESP Project Associate.

As voted by the 1990 New Orleans Conference the 1991 Bowling for Rhinos fundraiser was held to benefit Ngare Ndare Forest Preserve. This is an extension of the existing Ngare Seroi Rhino Sanctuary and will protect 52 sq. km of dry country cedar forest. This forest area contains many species including elephants, buffalo, eland, waterbuck, bushbuck, mountain reedbuck, warthog, bushpig, colobus monkey, lion, leopard as well as numerous endangered plant species. The funds are being used to install a solar electro-fence along the forest boundary (now 90% completed). This will primarily keep the elephants out of surrounding agricultural lands and avoid conflict with the native farmers. The forest preserve is also suitable habitat for eventual release of rhinos from the sanctuary, and serves as a migratory corridor for the African Elephant.

According to Nanci's report 34 Chapters/Institutions participated in BFR raising a total of \$123,174.13. Interest earned on the BFR account was \$287.21. AAZK, Inc. has transferred \$95,000.00 to Ngare Seroi Support, Inc. Debits for returned checks and bank service charges totaled \$621.25.

Top fundraisers and winners of the trip to Kenya were: Patty Pearthree, Indianapolis Zoo who raised \$4,877.00 and Brian McKenna, Lincoln Park Zoo who raised \$3,791.00. Nanci Pintavalli, BFR Coordinator, is resigning following this year's event and Patty Pearthree was nominated and approved as Coordinator for the 1992 Bowling for Rhinos event.

Public Education Committee - report submitted by Ellen Bradford

The Public Education Committee grew out of the Keeper Education Committee in order to address the need for public awareness of AAZK, zoos, and their respective roles in conservation, and to assist keepers in their ability to address the public. In 1991, Committee

Overview of the 1991 Board of Directors' Meetings, Continued

members were Thomas LaBarge, Burnet Park Zoo, and Elaine Puzo, Newark Museum. Ellen reported that the Zoo Question Column has collected enough material for a pamphlet. This pamphlet may become a project of the Zoo Atlanta Chapter. Tom LaBarge has completed layout of the poster and has resigned his position. A coordinator for the poster project is needed to select the photographs depicting keepers in their work environment and to solicit sponsors for production of the "Zookeeping Poster". An individual is needed to pursue planning and constructing of an AAZK Membership Information Display. Elaine Puzo continues to establish a network for museum curators who have live animal collections.

Following Ellen Bradfield's election to the AAZK Board, she chose to step down as PE Committee Chair. Elaine Puzo has agreed to fill this position. A budget of \$20.00 was requested and approved for 1992.

Public Relations Liaison - report submitted by Tim Kurkowski

There has been little activity in this position during 1991. The purpose of the liaison is to serve as an aide to AO in answering inquiries about the zookeeping profession from a zookeeper's point of view. Most of these types of inquiries come from high school and college students who are considering a career in the zoo field.

In order to more accurately reflect the purpose of this committee the Board elected to change its name to Keeper Correspondent. A budget of \$10.00 for postage expenses was approved.

AAZK Liaison to AAZPA - report submitted by Brint Spencer

The function of this liaison position is to help coordinate AAZK projects and programs with AAZPA so that both organization's efforts compliment each other and avoid duplication. Areas of cooperation include conservation and public education.

William Dennler, Toledo Zoo Director, and newly elected AAZPA Board member, met with the AAZK Board in Executive Session. Discussion on areas of mutual concern and cooperation produced suggestions on ways the two organizations could assist each other. Suggestions included the use of keepers as Studbook Keepers and involving keepers more in SSP Programs.

The AAZK Liaison has been appointed to serve in an advisory position to the current AAZPA President. This change should increase the effectiveness of the communication between both organizations. The AAZK Board of Directors will also solicit the AAZPA Board to maintain a liaison in the area of education.

Beginning with Oliver Claffey, the immediate past president of AAZK will assume the position of AAZK Liaison to AAZPA. This will become effective 1 January 1992 and will run for two years. Oliver has been invited to attend the AAZPA Board of Directors meeting in Baltimore next year. AAZPA will also send a representative to AAZK's 1992 Board meeting.

A budget of \$500.00 to assist in the Liaison's expenses for attending the AAZPA Board Meeting and the 1992 AAZPA National Conference was approved.

AAZK Awards Committee - report submitted by Janet McCoy

Janet reported the following as committee members for 1991: Harry Hofauer, Metro Toronto Zoo; Carolyn Horton, Metrozoo; Susan Bunn Spencer, Beardsley Zoological Gardens; Catherine Benner, Toledo Zoo; and Bob Debets, Board Oversight.

During 1991, the committee reviewed and amended the criteria for the Jean C. Hromadka Excellence in Zookeeping Award. It now requires nomination by two peers and verification of facts must be signed by the zoo director, curator, or immediate supervisor of the individual being nominated. A budget of \$25.00 was approved for 1991.

Research/Grants Committee - report submitted by Susan Barnard

The purpose of this committee is to screen applications for the keeper initiated research grants offered by the AAZK. There were six grant inquiries and two grants were awarded

Overview of the 1991 Board of Directors' Meetings, Continued

for the 1990-91 period. A \$500.00 grant went to Carla Wieser, Omaha's Henry Doorly Zoo for research on black-footed ferrets. A \$750.00 grant went to Judie Steenberg, Woodland Park Zoo, for research on Matschie's Tree Kangaroos.

Susan reported that grant applications for 1992-93 need to be submitted by 1 March in order to be reviewed by the Board at their mid-year meeting. A budget of \$1,525.00 to cover two \$750.00 grants & expenses was requested and approved.

Legislative Advisor

The goal of this position is to keep the membership informed, via *AKF*, of various legal, administrative and legislative changes affecting zoos, zoo animals, wildlife, conservation, and ecology. Current advisor John Stoddard has asked that a replacement be found for this position. The Board suggested the possibility that *AKF* Associate Editors might be able to fill this position. If this proves unfeasible, a new Legislative Advisor will be sought. The Board tentatively approved a budget of \$150.00, to cover the cost of needed newsletters, and conservation bulletins, and subscriptions.

Keeper Training and Education Committee - report submitted by Laura Treschel and Marilyn Cole

This year the Keeper Training Materials Identification portion of this committee filled two requests for materials. Several inquiries for lists of materials available were also received. Laura reported that Kathy Kelly, National Zoo, had requested the donation of copies of all available materials for use in their zoo outreach project. Because of the Association's tight budget the Board did not feel it could approve this expenditure (\$150.00) and encouraged Kathy to seek other sources of funding.

A budget of \$100.00 was approved for the KTMIP.

The Reference Search portion of this Committee reports that the Metro Toronto Zoo has authorized the use of their computer facilities for the project. At the present time there are over 3,000 entries of both bibliographies and individual references. These efforts have been coordinated with the Librarians' Special Interest Group and has drawn upon their resources.

Marilyn reported that members may now submit requests for bibliography searches. The cost is 25 cents per page of print-out (minimum of \$2.00). An article and order form for the project was published in the November, 1991 "AKF". A budget of \$25.00 was approved.

Staff Exchange - report submitted by Dale Frerking

Dale Frerking, Kansas City Zoo, was appointed to fill this position at the 1990 mid-year BOD meeting in Topeka. Since assuming the position, Dale has been familiarizing himself with the project, and has been sent background materials from AO, and is preparing in 1992 to contact all those institutions listed on the access sheet to see if they are still interested in being on the Staff Exchange Access List, whether or not they have had changes in their originally reported information, and to find out if any of these institutions have utilized the staff exchange program in setting up exchanges for their staffs.

Dale encourages anyone involved in a staff exchange (whether utilizing this project or not) to send a report on the exchange to him. A budget of \$200.00 to cover survey mailings, etc. was approved for 1992.

Keeper Accommodation List - report submitted by Heidi Manicki

Originated by a Metro Toronto Zookeeper in 1979, the purpose of the KAL is to provide traveling keepers with names of contact persons at various zoos around the U. S. and Canada who are willing to provide accommodations for their colleagues. The list now contains 74 contacts in 29 states, 5 provinces and 7 foreign countries. Heidi reported that she will be sending letters out to all currently listed KAL contacts and all AAZK Chapters to update the KAL list. It was suggested that a KAL contact update sheet be included in the annual Chapter Recharter packet. Keepers who are interested in serving as KAL contacts at their facilities should contact Heidi at Metro Toronto Zoo. A budget of \$50.00 was approved.

Overview of the 1991 Board of Directors' Meetings, Continued

Annual Conferences

The 1992 AAZK Conference will be held in San Diego and will mark the 25th anniversary of AAZK. The dates for the 1992 conference are September 27-October 2, 1992. Note that this conference will be a day longer than normal in order to allow for visits to the three participating facilities: San Diego Zoo, San Diego Wild Animal Park and Sea World. The Conference Committee conducted a 25th Anniversary Logo Design Contest through AKF. Ric Urban, Houston Zoo, was selected as the winner and his design will be used on all printed conference materials.

The theme for the 25th Anniversary Conference is "Celebrating Yesterday, Enriching Today, Shaping Tomorrow". Co-chairs for the conference planning committee are: Andrew Johnson, Sea World; Chris Peterson, San Diego Zoo; Terri Peterson, Wild Animal Park; and Guy Lichty, San Diego Zoo. The conference site is the Catamaran Resort Hotel on Mission Bay.

Guy Lichty reported that thanks to Executive Director Doug Myers, the Zoological Society of San Diego has graciously set aside \$20,000.00 for the Chapter to use toward organizing this event. In addition, Operations Manager Bob McClure at the Wild Animal Park has agreed to sponsor lunch for the day at this facility. Pending budget approval, Park President Mike Cross of Sea World of California has approved free admission, "special tours", regular day shows, a sit-down dinner, etc. Guy also reported that Brian Robinson, Senior Vice President of Smith-Charles Meeting Planners in San Diego, has generously offered his time, experience and resources to help the conference committee with their plans.

Possibilities under consideration for pre and post conference tours include: Baja, Disneyland, Universal Studios, Knott's Berry Farm, and Scripps's Institute of Oceanography.

The committee tentatively hopes to use telecommunications to provide the paper sessions live to members possessing speaker-phones, who are unable to attend the conference, but are willing to subscribe, or convince their administration to pay the fee required for this service. The Board instructed the committee to explore any legal ramifications and determine the advisability of a waiver or consent form from those presenting papers.

The 1993 AAZK Conference will be held at Zoo Atlanta, Atlanta, GA. Dates will be announced in the future. Omaha AAZK Chapter, located at the Henry Doorly Zoo, successfully bid to host the 1994 AAZK Conference.

In order to insure a guaranteed source of conference revenue for the Association the Board approved a new profit-sharing formula. The original 50/50 split with National will be dissolved. The new profit-sharing formula for AAZK Chapters hosting an AAZK National Conference will be for the AAZK Board of Directors to set the Conference Registration cost for each conference at \$15.00 over the host Chapter's actual budgeted costs for Conferences. This \$15.00 figure would be paid directly to AAZK, Inc. upon the conclusion of each conference. The \$15.00 cut would be for both week and day registrants. This is less than what other organizations do for conferences. The \$15.00 cut will insure a guaranteed source of revenue, without burdening the host Chapter. In conjunction with the fees guaranteed by the registration cut, the Association will also get 33% of the Auction monies.

What we have encountered with a 50/50 split of profits is that due to unforeseen circumstances, the AAZK cannot count on the Conference turning a profit. The reason for this new policy is to guarantee the Association a consistent income source every year without burdening individual members by raising their membership dues.

Conference Book

Tim Kelly, Chairperson of the Conference Book Committee, has completed the final book and presented it to the Board. Individuals contributing to this book include: Phil Pennock, Ed Hansen, Rachel Rogers, Marilyn Cole, Denise and Bob Debets. This book is not designed to answer all questions about putting on a conference, but serves as a reference tool from past conferences on how these committees did things, what worked and what didn't. Chapters in the book cover areas from selecting the conference hotel to holding an auction.

Overview of the 1991 Board of Directors' Meetings, Continued

The Administrative Office has copies of the Conference Book which may be checked out by Chapters interested in bidding to host a conference. There is a \$15.00 deposit fee which is refundable if the Chapter successfully bids to host a conference.

Zoo/University Project - report submitted by Michael Illig

The purpose of this project is to provide a list of colleges and universities which offer course work or degree programs relating to animal care/management. The list currently contains 98 entries representing 38 States, two Provinces and Great Britain's National Extension College in Cambridge.

Mike reported that he had five requests for lists during 1991 (AO sent out about 20 copies). Mike also gave out 23 lists to individuals visiting his facility who had expressed an interest in zookeeping careers.

During 1992 Mike plans to continue updating and expanding the list as needed. Anyone who knows of courses or degree programs in their area is asked to send pertinent information to Mike so that it may be included in updated editions of the Zoo/U List.

Mike stated that Metro Washington Park Zoo has graciously provided computer time, paper and some postage for the project so there have been no expenses to AAZK during 1991. The Board approved a budget of \$50.00 for 1992.

AAZK Keeper Training Videotape Project - report submitted by Harry Hofauer

Harry assumed the position of Production Coordinator in January 1991. Anna Michel, Metro Washington Park Zoo, also serves on this committee. Distribution continues out of AO in Topeka. Two tapes are currently available for purchase: "Keeper Safety - An Attitude Adjustment"; and "An Introduction to Feeds and Feeding".

During 1991 Chris Peterson from the San Diego Zoo provided his expertise and that institution's facilities for duplicating the two training tapes. The tapes were duped at a cost of \$2.75 each.

Tim Kelly and Bob Debets have suggested that all past conference bid presentations be put onto one videotape and be made available to Chapters thinking about presenting a bid. This idea will be pursued in 1992. Harry also reported that he now has the script and graphics for the video trailer in hand and will work at getting this completed this year. The trailer will be used at the beginning of every AAZK training tape.

Harry reported that Judie Steenberg, Woodland Park Zoo, is continuing work on her training tape entitled "A Keeper's Role in Zoo Animal Health". Harry also stated that there had been some interest expressed by the Santa Fe Community College Teaching Zoo students/staff in doing a tape. A budget of \$25.00 to be paid from the Videotape Project Account was approved.

Animal Data Transfer Form - report submitted by Bernie Feldman

Bernie reported that during the past year 5,844 ADT forms were mailed out to requesting individuals/institutions. This important resource document continues to be used widely in the zoo field and is truly one of AAZK's most worthwhile projects. The forms are supplied gratis as a professional service of AAZK.

During 1991 the question of whether or not the ADT Form could be copyrighted was investigated. Because the form changes every time it is filled out, the Copyright Office denied the application to copyright the form itself. This same situation was also found to be true with the Exhibit Design Form.

At the 1990 open Board meeting, it was suggested it would be nice to have a reply form which the receiving keeper could return to the sending keeper to inform them on how the shipment went, the animal's condition upon arrival, etc. It has been decided to implement this suggestion by adding a simple line at the bottom of the form requesting that the receiver fill in the appropriate information, photocopy it, and send it back to the original institution (keeper). This change will be implemented when the next printing is done in early 1992.

Overview of the 1991 Board of Directors' Meetings, Continued

It was announced that the ADT Committee had received a donation of \$100.00 from the Columbus Zoo.

A budget of \$1,000.00 to cover the cost of printing the ADT forms, postage, misc. was approved for 1992.

Exhibit Design Form - report submitted by Mark de Denus

Since taking over this inactive project in 1989, Mark has redesigned the form to make it easier to fill out while still providing the necessary information to make it useful. The idea behind the redesign of the form was also to standardize the information being sent in from contributors. At the 1991 mid-year meeting, Mark presented the Board with the final draft of the EDF.

In July 1991, twenty-two AAZK chapters were targeted to participate in a pilot survey. Four EDFs were sent to each chapter along with a cover letter to the Chapter President and the zoo or institution's director. The purpose was to test whether the Form itself was adequate (useable and understandable), and also, to determine what kind of positive response would be derived from the survey. The results were discussed at the Exhibit Design Survey Workshop held in Toledo. Information on the survey, the project's future, etc. will be included in an upcoming issue of AKE.

Thanks go to the Assiniboine Park Zoo Keepers Association/AAZK Chapter for their financial assistance in printing the new test survey form. John Brangan, Virginia Zoo, and Eric Krussman, National Zoo have been approved as Project Co-chairs. The Board approved a budget of \$500.00 to cover printing costs, postage, etc. for 1992.

Chapter Projects/Products

Bumper Sticker Project (a project of the High Plains AAZK Chapter, Garden City, KS)

During 1991 the High Plains AAZK Chapter dissolved. The remaining inventory of bumper stickers and profits in the Chapter's account were forwarded to AAZK. Since a bumper sticker is now available from the Jacksonville AAZK Chapter, the "I Zoo, Zoo You" bumper stickers are no longer available.

AAZK Bumper Sticker Project (a project of Jacksonville AAZK Chapter, Jacksonville, FL)

This Chapter has designed and now offer for sale a silk-screened 3" by 9" bumper sticker featuring the AAZK logo and the wording "Zoo Parks/Modern Arks". They are offered for sale at \$2.00 each for 1-49 and \$1.55 each for 50 or more. The postage is an additional 30 cents for each five bumper stickers. To order, please contact either Micki Corcoran or Ann Hinton at Jacksonville AAZK Chapter, 8605 Zoo Road, Jacksonville, FL 32218.

AAZK Logo T-Shirts/Sweatshirts/Colder Holders (a project of the Little Rock AAZK Chapter - report submitted by Marie Schmude.)

The Chapter continues to offer T-Shirts for \$8.50 each and Sweatshirts for \$18.00 each. T-shirts come in blue, brown and tan. Sweatshirts are in either gray or maroon. The colder-holders come in gray, red or orange and feature the National AAZK logo or the Little Rock Chapter Logo and sell for \$3.50 which includes shipping. The project has made \$135.50 during this reporting period with half this profit submitted to AAZK.

AAZK Magnetic Safety Signs (a project of the Flint Hills AAZK Chapter, Manhattan, KS) - no report submitted by the Chapter.

AAZK Logo Coffee Mugs/Egg Ornaments (a project of the Milwaukee County Zoo AAZK Chapter - no report was submitted for 1991.

The Administrative Office has been informed that these items are no longer available. AO did receive \$43.94 for coffee mugs and \$15.00 for eggs.

AAZK Logo License Plates (a project of the Detroit Zoo AAZK Chapter) - no report submitted

AAZK Logo Stickers/Decals (a project of the Mill Mountain Zoo AAZK Chapter) - no report submitted for 1991

Overview of the 1991 Board of Directors' Meetings, Continued

AAZK Logo Blue Mesh Shopping Bags (a project of the Philadelphia Zoo AAZK Chapter)

AO has received \$50.00 from this project for 1991. The bags measure 16 x 19 inches, are made of nylon mesh and heavy canvas and sell for \$4.00 each plus \$1.00 postage. They may be ordered from the Philadelphia AAZK Chapter.

AAZK Book Sale (a project of the Beardsley Zoo AAZK Chapter) - no report submitted.

The Chapter offers a list of books at discount rates on a quarterly basis through AKF. These books deal with natural history, zoology, conservation and the environment--topics of interest to AAZK members.

AAZK Logo Keychain (a project of the Dallas Zoo Chapter AAZK)

The Dallas Zoo Chapter AAZK is now offering rhino logo keychains featuring a thermometer on one side and a wind chill chart on the other. Cost is \$3.50 plus 50 cent postage when ordered singly. Orders of 5-7 should add \$2.00 postage; orders of 8-12 add \$3.00 postage; larger bulk orders available. Contact Sara Weller, c/o Dallas Zoo, 621 E. Clarendon, Dallas, TX 75203.

AAZK Logo Flying Saucers (Frisbees) (a project of the Beardsley AAZK Chapter, Bridgeport, CT)

Made from recycled plastic, these flying saucers have the AAZK logo in black on bright green. The cost is \$5.00 each and can be ordered by contacting Chapter Vice President Rob Thomas, c/o Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610.

AAZK Keepers Care Buttons (a project of the Lincoln Park Zoo AAZK Chapter, Chicago, IL)

"Keepers Care" buttons are available for \$1.00 each (minimum order \$5.00) by contacting Susan Moy, Lincoln Park Zoo, 2200 N. Cannon, Chicago, IL 60614.

AAZK Slide Library Project (a project of the Central Arizona AAZK Chapter, Phoenix, AZ)- report submitted by Luke Thirkhill

Luke reported that only one individual had submitted slides for this project. Lack of participation by individuals/chapters has caused the project to be dormant for several months. Various incentives to slide donors are being discussed and more information will appear in an upcoming issue of AKF.

Proposals brought before the Board

The Buckhorn Publishing Company had proposed a cooperative effort between them and AAZK. This would involve the sale of art prints of various species through zoo gift shops. After investigation by the committee it was determined that AAZK and Buckhorn could not reach an agreement on the type of art prints to be sold. The project was therefore dropped. The Board considered a request from David Luce concerning a member's suggestion of the development of a computer bulletin board for keepers. The pros and cons of the suggestion were discussed and the Board instructed AKF Editor, Susan Chan, to publish the proposal soliciting member input into its feasibility.

Minutes of the 1991 AAZK General Membership Meeting

The meeting was called to order at 3:10 p.m. on 10 October 1991 by President Oliver Claffey.

The next order of business was a report by each Board Member on the committees/projects under their oversights. Pertinent comments by project/committee chairs are included in the overview section above.

In discussing the Association's financial situation President Claffey noted that because of our non-profit tax status we are eligible to apply for support grants. Lisa Cuevas, Henry Doorly Zoo, Omaha, NE, has offered her assistance in writing grants on behalf of AAZK.

President Claffey introduced new AAZK Board members, Rachel Rogers, Mark de Denus, and Ellen Bradfield. He also announced that Ed Hansen, Reid Park Zoo, Tucson, AZ, will serve as AAZK President beginning January 1, 1992. Janet McCoy, Metro Washington Park Zoo, will assume the office of Vice-President at the same time.

Overview of the 1991 Board of Directors' Meetings, *Continued*

By-law revisions which had been proposed to the membership in June were approved unanimously as amended by the voting membership present.

President Claffey announced that members were needed to serve on the AKF Advertising Committee and the By-laws Review Committee. Interested persons should contact President-Elect Ed Hansen.

The Omaha AAZK Chapter located at the Henry Doorly Zoo, Omaha, NE had earlier presented a bid to host the 1994 National AAZK Conference. At the General Meeting this bid was unanimously approved by the attending delegates.

Guy Lichty, Co-Chair for the 1992 San Diego Conference encouraged all future conference committees, as well as the Association as a whole, to work towards integrating recycling into all projects. He particularly encouraged conference committees to use recycled paper for all of their printed materials.

There being no further business, the meeting was adjourned to reconvene in San Diego in 1992.



AAZPA Announces Awards

The following awards were presented at the 1991 AAZPA Conference held in September in San Diego, CA:



Edward H. Bean Awards

- Audubon Park & Zoological Gardens - Breeding Program for Asian Hornbills
- San Diego Zoo - Long-Term Propagation Programs for Francios' Langur
- Waikiki Aquarium - Breeding Program for Chambered Nautilus
- Woodland Park Zoological Gardens - Long-Term Propagation Program for Solomon Island Leaf Frogs

Significant Achievement Awards

- New York Zoological Society St. Catherine's Island Wildlife Survival Center-Long-Term Propagation Program for Maleo
- Lincoln Park Zoological Gardens - Birth of an Asian Elephant
- San Diego Wild Animal Park - Long-Term Propagation Program for Russian Saiga
- Columbus Zoological Gardens - Breeding Program for Lake Victoria Cichlids
- San Diego Zoo - Long-Term Propagation Program for Fiji Iguana

Education Award

- Monterey Bay Aquarium - Live from Monterey Canyon

Significant Achievement Award

- Chicago Zoological Park - Be a Bird

Exhibit Award

- New York Zoological Park - Baboon Reserve and African Market



Starting an Animal Keepers' Computer Bulletin Board

By
James Bousquet
Stockton, CA

With ever-increasing efforts to improve communication between animal keepers and AAZK Chapters, it seems like the perfect time to establish an Animal Keepers' Computer Bulletin Board. A Computer Bulletin Board is a computer generated source of rapid information which can be sent or received by anyone owning a computer and the appropriate program.

For example, an animal keeper needing information about an animal or an animal-related problem can send a request for information to all participating zoos. Since the messages travel over phone lines, it is instantaneous. By regularly checking the Bulletin Board, animal keeper staff can respond to requests for information quickly. Imagine what this rapid flow of professional information could do for AAZK. Just a few examples of requests for information recently printed in *Animal Keepers' Forum* which could be sent by computer Bulletin Board are: data on slow loris habitat, public feeding policy at your zoo, introducing a new male zebra, questionnaires, research projects, data on two-way radios, etc. Categories for the transfer of information might be: general information on Birds, Mammals, and Reptiles; What's New at Your Zoo; Breakthroughs in Exhibit Design or Husbandry; Happenings; AAZK Information, etc. After some use, new categories would make themselves evident.

Another benefit of establishing an Animal Keepers' Computer Bulletin Board is as a source of revenue for AAZK. If AAZK develops and produces its own program, it could be sold to those Chapters/Institutions/Individuals wishing to participate. I recently discussed the possibilities of such a program with a computer expert at Hewlett-Packard and he said it is not only possible, but many companies have funding, equipment and staff to donate to such projects. Since all zoo computers are compatible (as for ARKS, MedARKS, etc), it should work without any problems.

This could certainly be an opportunity for AAZK to make a quantum leap forward in communications as well as raising some funds. If there is enough interest in the program, I will do a feasibility study to see if this program can be adapted to the computers now being used in zoos. We would also need to know the costs of starting and maintaining an Animal Keepers' Computer Bulletin Board. Please send letters of interest to the AAZK Administrative Office, 635 Gage Blvd., Topeka, KS 66606.



Rhino Capture/Giraffe Relocation Tape Available

Andy Lodge, Founder and President of the Ngare Sergoi Support Group, Inc. is making available to interested AAZK Chapters or individual members a videotape showing some of the work being done at both the Ngare Sergoi Rhino Sanctuary and the Ngare Ndare Forest Reserve. Included on the tape is footage of the giraffe relocation program, the building of the solar fence at Ngare Ndare and the first release of a sanctuary rhino into the wild. Cost per tape is \$6.00 and may be purchased by contacting Andy at N.S.S.G., Inc., P.O. Box 29503, Columbus, OH 43229. Make checks payable to Ngare Sergoi Support Group. Slides showing the airplane and truck purchased with 'Bowling for Rhino' funds and sporting the AAZK Rhino logo are available to Chapters free of charge by contacting Andy.



San Diego Chapter Announces '92 Conference Logo Winner

About the artist.....

Bird Keeper Ric Urban of the Houston Zoo is our logo winner and will receive free registration to the 1992 AAZK Conference. His inspiration came from global conservation, a 25-cent stamp, and a tree frog that jumped on his window while he was drawing the logo. Ric has been drawing for over 15 years and created the logos for the Flint Hills and Cypress Coast AAZK Chapters.



This is San Diego '92.....

The 18th National AAZK Conference headquarters will be at the CATAMARAN RESORT HOTEL on Mission Bay.

Our Conference theme is "Celebrating Yesterday, Enriching Today and Shaping Tomorrow". We will "Celebrate Yesterday" at the Icebreaker aboard the William D. Evans, an authentic 19th century paddleboat, where we will honor our Founding Fathers while cruising beautiful Mission Bay. "Enriching Today" will be the focus of our paper sessions and workshops. Finally, we intend to provide a speaker at the final banquet who will inspire us into "Shaping the Future" as the 18th National AAZK Conference comes to a close.

Visits to SEA WORLD of California, the SAN DIEGO ZOO and WILD ANIMAL PARK are planned with special behind-the-scenes tours for those who register early! Other highlights include a Beach Party on the bay, an awesome Zoolympics and your choice of several pre- and post-conference tours with varying price ranges. Look for future ads on the trips....

Dates for the Conference are Sunday, 27 September through Friday, 2 October 1992. Please note the Conference is an extra day longer than most have been in order to allow us to show delegates our three fine facilities.

LOOKING FORWARD TO SEEING YOU...
27 September through 2 October 1992
in beautiful San Diego, CA

USFWS Issues Status Report on Endangered Species Recovery Effort

The California condor, southern sea otter, the Lee pincushion cactus and the Devil's Hole pupfish are among the 41 percent of the nation's endangered and threatened species whose populations are stable or increasing, according to a report to Congress recently released by the Interior Department's USFWS.

"Endangered and Threatened Species Recovery Program" summarizes the status of the more than 580 federally endangered or threatened plants and animals in the United States. The report states that 38 percent of listed species are declining, while the exact status of about 19 percent is unknown. About 2 percent of the plants and animals listed are believed to be extinct. Determining whether a species is extinct can be difficult, and most in that category likely were extinct well before passage of the Endangered Species Act in 1973. These species are removed from the list when scientists believe there is no longer any possibility of finding any surviving in the wild.

Of the 581 listed species in the United States, 352 are covered by approved recovery plans, and plans are currently being developed for an additional 130 species. The USFWS has placed a high priority on development of plans for the remaining 99 species, many of which have only recently been listed. According to the report, those species with recovery plans show a greater tendency for population increases than those without plans.

Recovery plans are practical, working guidelines that outline specific research and management tasks for species recovery. While carrying no legal authority, they can nonetheless provide a "blueprint for recovery" for use by private, federal and state agencies in undertaking programs to enhance listed species.

The report also shows that the majority of species considered improving are mammals, birds, or plants; bird and fish species are reported as most stable. Invertebrates, including snails, clams, insects, and crustaceans, are most prevalent among the species whose status is unknown. Freshwater mussels comprise 75 percent of the invertebrates known to be declining.

The report, the first to pull together details on recovery efforts for each listed species, is required under a 1988 amendment to the Endangered Species Act directing the Secretary of the Interior to report to Congress every two years on the status of endangered species and recovery plans. This report covers listed species in the United States or its Trust territories under jurisdiction of the Department of the Interior as of 1 October 1990.

Copies of the 400-page report, stock number 024010-00691-9, are available for \$24.00 from the U.S. Government Printing Office, Superintendent of Documents, Washington, DC 20402. Credit card orders may be placed by calling (202) 783-3238.



Animal Rights/Animal Welfare Publication Available

The animal rights movement is impacting wildlife management programs across North America. Fish and wildlife management agencies, at both the Federal and State levels, are being challenged more often over traditional uses of animals such as hunting, trapping, fishing, and habitat management. Many wildlife professionals in the past took the view that the animal rights movement eventually would fade away, and, therefore could be ignored. However, the movement is growing, well-funded and effectively presents its arguments to many segments of the public. Nationally, there are approximately 400 animal activists groups, with estimated annual budgets of \$250 million.

The methods used by the animal rights movement to challenge fish and wildlife management agency operations are numerous and varied. Issue number 89 discusses the animal rights/animal welfare movement. For a copy of Newsletter No. 89 or more information about the Fish and Wildlife Reference Service, call 1-800-582-3421.



Chapter News

Beardsley Zoo Chapter

The Beardsley Zoo Chapter has recently adopted a Chapter logo to be used on patches embroidered in blue, green, black and white. The logo was designed by Chapter member Lisa Tryon, and patches are available by contacting her at the Beardsley Zoo, 1875 Noble Ave., Bridgeport, CT 06610. The cost is \$5.00 each which includes postage and handling.

The Chapter is also involved in a raffle during our Zoo's annual Beastly Ball, an adult masquerade party held for friends of the zoo, staff and docents. Other events our Chapter will be participating in this year include American Heritage Day in November and our Zoo's holiday celebration of Winter Fest this month.

--Linda Oltra, President

Metro Toronto Zoo AAZK Chapter

This has been quite a year. The dedicated staff in the Health Unit and the Africa Pavilion have been working 24-hour shifts, taking care of the 2.0 Lowland gorillas. In March, both Jabari and Patrick developed a flu-like infection, but while Jabari recovered quite quickly, Patrick developed unresponsive diarrhea, blood salt deficiencies, and lost a lot of weight.

With the advice and assistance of the Intensive Care Unit and other departments of the Hospital for Sick Children, intravenous feeding was established. Patrick, who demonstrated a remarkable acceptance of his lifeline, very gradually regained strength, but it took several weeks before his intestines were moving normally again, and along the way he twice developed infections associated with the catheters, as well as magnesium deficiency and anemia.

It all proved worthwhile and was a great relief when he returned to the Pavilion



on 11 June. Patrick is doing fine and has put on weight.

In May the Wart Hogs came to Toronto and to celebrate the occasion, the Metro Toronto Zoo declared this summer "A Celebration of Pigs" with 11 pigs, representing six species, all but one having been obtained through selective breeding by man. These species ranged from Vietnamese pot-bellied pigs to European wild boars to Hampshires, Yorkshires and Spotted pigs.

October saw the opening of the Spotted Hyaena (*Crocota crouta*) exhibit.

Once again this year, during December and early January, the Zoo was open Saturday and Sunday nights until 9 p.m. with many sections of the zoo illuminated and Santa Claus on hand for the children.

From the members of the MTZ Chapter, we wish everyone a Merry Christmas and a Happy New Year.

--Neil Porter, Chapter Liaison

Audubon Chapter AAZK

As many of you know, 1991 was the year of the Rhino Walk. The Audubon Chapter of AAZK helped sponsor the New Orleans leg of this national event the weekend of 17 August. Although August is not a good time of year to be walking in this part of the country, and in spite of the fact that the Rhino Walk was scheduled the same day as the Audubon Zoo's annual Kool-Aid Day (a day known for record attendance), the Rhino Walk went well.

That evening we sponsored, organized and ran an event at a local bowling alley/bar; we named the event "Rockin' for Rhinos". The bowling alley allowed us to charge a \$5 cover for the evening's entertainment. They also helped us with publicity, as did our Zoo PR Dept. For their assistance, the bar kept the money made on alcohol sales; the Chapter got to keep the money made from the cover charge and raffle ticket sales. A total of five bands played that night to record-breaking crowds. "Rockin' for Rhinos" was a huge success. We made \$2,338, half of which will go to the Ngare Sergoi Rhino Sanctuary; the other half will go to the Rhino Walk fund.

Other news: many of our Chapter members are taking Spanish lessons. Dean Wolcott, who has worked with CARE and the Peace Corps, is teaching two classes per week. This is a great opportunity for many to start learning, or brush up on the language of our sister zoo, La Aurora Zoo in Guatemala.

Our Chapter is currently in negotiation with our zoo's administration to install a Conservation Parking Meter for the rainforests. Hopefully with further information supplied to us by Norman Gershenz, we will be able to convince the powers-that-be to let us install this simple, but effective means of collecting funds to save the rainforests.

--Pamela Barker, Secretary

San Diego AAZK Chapter

The Chapter hosted its First Annual Beach Party on 13 October, complete with Bar-B-Q and zoolympic games! Proceeds were donated to the Pam Orsi Memorial Fund in the amount of \$160.00.

October Meeting...Dr. Nancy Czekala, Endocrinology Specialist/CRES (Center for Reproduction of Endangered Species) at the Zoo, discussed her project involving the Mountain gorilla (*Gorilla gorilla beringei*) of Rwanda.

Dr. Czekala conducted a study of the reproductive events of the free-ranging mountain gorilla, in an effort to understand the causes of infertility in captive populations of the Western lowland gorilla (*Gorilla g. gorilla*). According to studbooks, 48% of mature, captive female lowland gorillas are non-reproductive.

Dr. Czekala addressed probable causes/stressors of subnormal fertility and/or subnormal reproduction: diet, environment, enclosure, noise, the public, hormonal, genetic, lack of ovulation, lack of breeding, miscarriage, infertility of males or females. Detailed graphs were presented among the excellent slides.

Reproductive evaluation of the gorilla can be done by measuring hormones in the urine. Urine collection was obtained from habituated, cycling Mountain gorillas in the Virunga Mountains (7-12,000 foot elevation) to compare urinary hormones with that of captive gorillas. There are no non-captive, habituated Western lowland gorilla groups at this time.

Once the individual was spotted within the group (by nose prints), she was followed until she urinated. Watching and waiting took over an hour! The urine was collected by syringe from the ground and vegetation and sample tubes were frozen at camp. Over 150 urine samples were collected during the trip and transported to the San Diego Zoo's CRES lab.

--Mary Dural, Chapter Liaison

Chapter News, Continued

National Zoo AAZK Chapter

The National Zoological Park was the last stop for Michael Werikhe (affectionately known as the Rhino Man) on his 1,500 mile series of walks through North America to raise awareness and funds for rhino conservation. Michael was at NZP from 6-13 September. The week of activities included a 5-mile Rhino Walk; a 5-kilometer Fun-Run; Rhino Revelry, a walk with the Potomac Appalachian Trail Club; Kilimanjaro Club Night, a walk from the Kenyan Embassy to Capitol Hill; Rock for Rhinos at the Hard Rock Cafe; a reception followed by rhino lectures; and finally a Rhino Encounter Reception at NZP's elephant house. Over \$10,000 was raised during the week of activities.

In October, six representatives of the NZP-AAZK Chapter attended the AAZK Conference in Toledo, OH. One of these six attendees was Brian Phillips, an exchange keeper from the Healesville Sanctuary in Victoria, Australia.

Eric Krussman (NZP) and Rosemary Krussman (Baltimore Aquarium) presented their outstanding video at the Conference. Their presentation was entitled "On the Ground Conservation that Really Works: The Preakness Clean-up". Eric also participated in an Exhibit Design Workshop in which keepers shared examples of their involvement in exhibit design. Eric talked about his work on NZP's new Bat Exhibit.

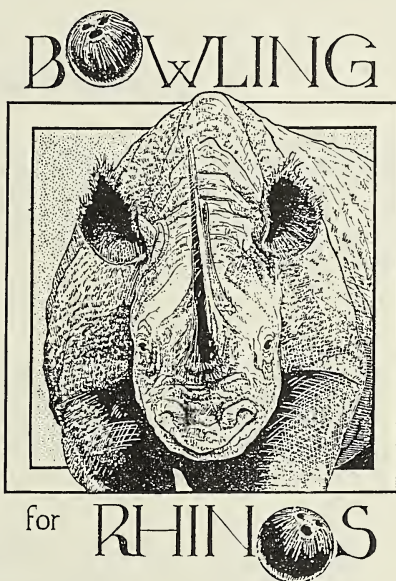
Kathy Kelly and Carol Prima gave a presentation entitled "Keepers Helping Keepers Across the World". The presentation demonstrated how the NZP Chapter has implemented an international outreach project which has provided over 1,400 pounds of wildlife and conservation materials to 14 foreign zoological institutions and one African Wildlife Management University. The project is a year old now and still going strong.

--Kathy Kelly, Chapter Liaison

Rocky Mountain AAZK Chapter

The Chapter is offering both posters and T-shirts featuring the Bowling for Rhinos design shown here. The posters are 18 x 24 inch in black on white and may be used to advertise a Chapter's BFR event in 1992. Cost is \$4.50 for individual orders and \$4.00 each for a Chapter order of five or more. The T-shirts are black print on grey, 50/50, size Large only. Cost is \$12.00 per shirt or \$10.00 each for a Chapter order of five or more. Shirts can also be personalized with your Chapter's name on it. Call for details.

Write Rocky Mountain AAZK Chapter, Denver Zoo, 2900 E. 23rd., Denver, CO 80205 or call (303) 331-4117 and leave a message.



Los Angeles AAZK Chapter

Our October meeting featured a slide presentation, "Zoos of Mexico", by Robert Cudney, reptile keeper, The Zacango Zoo, 45 minutes outside of Mexico City. This was of particular interest to us as that is the future home of Hannibal, our bull African elephant. The zoo is located at the base of a volcano at an elevation of 9,000 feet on the site of a former estate. The exhibits

Chapter News, Continued

are large and well kept. Seven veterinarians serve as curator/keepers full time. Two grizzly bears and an orangutan from our zoo already reside there.

Another zoo of interest was ZooMAT in the state of Chiapas in southern Mexico. This large zoo utilizes the natural settings of the local environment in such ways that the animals appear to be uncaged. The howlers actually roam freely in and out of the zoo to visit the rainforest nearby. Six veterinarians on the staff supervise the general keepers who are mainly former farmers.

Recently, an historic first meeting took place when the Mexican government,

eight zoo directors and U.S. administrators convened in an attempt to regulate the standards by which the zoos operate. This cooperative approach to problems bodes well for the zoos in Mexico.

In November we held our annual fundraiser Auction, silent and regular. A small but enthusiastic group attended, bidding on animal related items donated by members, friends of the zoo and commercial organizations. The funds raised are used to defray conference expenses for keepers, to support projects in developing countries and to purchase needed "wish list" items for exhibits.

--Lois Carwile, Chapter Liaison



Information Please

The Virginia Living Museum is seeking to achieve high efficiency in the breeding of house mice (*Mus musculus*) that are fed to exhibit animals. The museum is looking for any information about the factors that play a role in the reproduction of small rodents, especially house mice, such as diet, exercise, proximity, and odor. Please send any information to: Eric Linthwaite, Virginia Living Museum, 524 J. Clyde Morris Blvd., Newport News, VA 23601.

We would like any information on breeding Lesser Green Broadbills (*Calypotomena viridis*). One of our pairs has been trying to nest. Each attempt fails. We would also like any information on the breeding of the Australian Magpie Goose (*Anserana semipalmata*). If anyone has a suggestion about sites, materials, etc. please send them to: Bronx Zoo Dept. of Ornithology, 185th & Southern Blvd., Bronx, NY 10460, Attn: Doug Piekarz.

AAZK Administrative Offices

1-800-242-4519 (U.S. Only)

1-800-468-1966 (Canada)

FAX 913-272-2539



Book Review

Rain Forest: A Guide to Research and Tourist Facilities at Selected Tropical Forest Sites in Central and South America

By James L. Castner 1990

Feline Press, P.O. Box 7219, Gainesville, FL 32605

380 pgs. Paperback. Price: \$20.00

*Review By Robert Berghaier
Mammal Keeper Supervisor
Zoological Society of
Philadelphia, PA*

The tropical rainforests of Central and South America have received lots of attention in the past few years, not only from conservationists, but from the popular media. As a result, tropical forests are a current "hot" topic of interest. The problems of rainforest conservation have even attracted the attention of rock stars like Sting and Grace Slick. But who would consider traveling to see these forests? Are they not damp, hot, insect-ridden places? Who wants to get so uncomfortable? Like really, you sweat, your mascara runs, you end up with a mass of insect bites and your hair is unmanageable. Enough sarcasm!

Tropical rainforests are incredible places, living cathedrals, thriving with life forms of almost inconceivable diversity. Anyone with even a casual interest in biology should plan to visit at least one tropical rainforest in their lifetime. You would soon understand why they had such a great influence on the writings and theories of biologists such as Charles Darwin, Alfred Wallace and Alexander Humboldt.

Mr. Castner's book is an excellent guide to anyone who wishes to make a journey to a tropical American rainforest as a researcher or tourist. The book is divided into four extended chapters and four appendices.

The first chapter covers selected lodges and research sites in seven countries: Peru, Ecuador, French Guyana, Venezuela, Trinidad, Costa Rica and Panama. There is a general information section about each country that includes such facts as population, area and geographical information. There is also a rough map pointing out where the lodges and sites are located.

After the introductory section comes the real meat of this book. Detailed information is provided for selected lodges and research stations that have been personally visited by the author. This includes, when available, a contact name, an address, a telephone, telex, and, yes, FAX number. There is also a description of the lodge or site in question, logistical information, data on forest types, weather, cost and very helpful information on the area's trail system. This last item is very important. Tropical rainforests are beautiful places but they are difficult to move through. It is extremely easy to get lost unless you read a compass well. You also have to be aware of the hazards of the forest while moving through them. These include venomous insects, snakes, and plants with spikes and stickers. Having a good trail system allows a visitor to spend more of their efforts viewing the diversity of the life around them, instead of concentrating on avoiding the more hazardous elements of that diversity.

I read closely the author's comments on two areas that I have personally visited in Peru. These were the Manu National Park and the Explorer's Inn located in the Tambopata Reserve. I found his information to be accurate. The best testimonial that I can offer is that if I had read this book before traveling to both of these places, my experience would have been enhanced.

Book Review, Continued

The three remaining chapters of the book contain some very useful information for those considering doing research in the American tropics. Chapter Two lists varied rainforests, an extensive bibliography of books and publications dealing with tropical rainforests and a list of book dealers who could possibly help provide the above-mentioned material.

Chapter Three, "Hands On" Organizations, is an excellent addition that lists organizations that are looking for participants to help in field projects. This should be of interest to keepers who are looking for opportunities to participate in research projects in the tropics. These can be either "pay-to-go-on projects" such as Earthwatch or listings for field assistants in The American Ornithologists Union. I have personally found that the tropical experience that I gained on my first Earthwatch expedition in Peru was invaluable. I have drawn on it extensively for later travels on my own to Central Africa, Peru and Madagascar.

Chapter Four would be of great interest to those who got excited reading Chapter Three. It is titled "Sources of Funding". The information contained in it opens up avenues of possible financial assistance for those who are interested in undertaking research in the tropics.

The appendices, while short, are very informative. One lists travel agencies and helpful travel tips (the most useful in my opinion is to bring a book to read during such frustrating travel situations as a 12-hour flight delay). Another offers useful specialized English/Spanish vocabulary for biological and geographical terms. A third lists the names and addresses of some of the foremost tropical biologists in the world. The final appendix is a listing of selected zoos and botanical gardens in the U.S. that may provide helpful information (and, of course, the Philadelphia Zoo is mentioned owing to the great wisdom of the author!).

I would recommend this book for anyone considering travel to the rainforests of the seven countries mentioned in the text. While the listings of references, organizations and individuals can be found elsewhere, it is probably not in such a convenient format. The chapter on funding sources is an excellent addition to a book of this nature and in my reading experience unique in this regard.

My only suggestion would be for Mr. Castner to write another fine book such as this one providing similar information for the countries of Brazil, Suriname, Belize and the other countries of tropical America.



AAZK Announces New Professional/Contributing Members

Karen Del Priore, Long Island Game Farm (NY)
Margery Bradshaw, Pet Farm Prk. Inc. (VA)
Sabbra Moruzzi, no zoo listed (Destin, FL)
Nicholas Nelson, Birmingham Zoo (AL)
Margit Evans, Nashville Zoo (TN)
Jan Weing, Washington Prk. Zoo (IN)
Dave Ely, Dakota Zoo (ND)
Fawn Prevost, Topeka Zoo (KS)
Rosa Kelly, no zoo listed (Houston, TX)
Martine Colette, Wildlife Waystation (CA)
Caron Bender, Living Desert (CA)

Suzanne Ambs, National Zoo (DC)
Becky Callis, Pet Farm Prk., Inc. (VA)
Lisa Kolbach, Busch Gardens (FL)
Tom Garrett, Jackson Zoo. Prk. (MS)
Linda Homer, Columbus Zoo (OH)
Patricia Granberry, Detroit Zoo (MI)
Kirk Keefe, no zoo listed (Oak Park, IL)
Adam Eyres, Fossil Rim Wildlife Center (TX)
Deanne DeBo, San Antonio Zoo (TX)
Mark Bressler, Sea World (CA)
Gina Porciuncula, Oakland Zoo (CA)

Jill Vestal, Folsom City Zoo (CA)

New Contributing Members

Jack Brown, Director, Santa Fe Community College Teaching Zoo, Gainesville, FL
Joan Schultz, Boomer Ball, Inc., Grayslake, IL



L.I.N.K.

(Liaison and Information Network for Keepers)

Coordinator for the LINK System: Mark de Denus, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba, Canada R3P 0R5. (204) 837-2916 (h).

Regional Coordinators

ALABAMA - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

ALASKA - Vacancy

ARIZONA - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716

ARKANSAS - Debbie Jackson or Ann Rademacher, Little Rock Zoological Gardens,
#1 Jonesboro Dr., Little Rock, AR 72205

CALIFORNIA - Vacancy

COLORADO - John Turner, Denver Zoo, City Park, Denver, CO 800205

CONNECTICUT - Jeanette Nadeau, Roger Williams Park Zoo, Providence, RI 02905

DELEWARE - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104

FLORIDA - Rick Smith, 11707, #5 Park, Orchard Circle, Tampa, FL 33612

GEORGIA - Fred Alvey, Zoo Atlanta, 800 Cherokee Ave. S.E., Atlanta, GA 30315

HAWAII - Michelle Suenishi, Hilton Hawaiian Village, 2950 Ena Rd., Honolulu, HI 96815

IDAHO - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103

ILLINOIS - Pat Swieca, 5710 W. Cullom Ave., Chicago, IL 60634

INDIANA - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615

IOWA - Carla Wieser, Omaha's Henry Doorly Zoo, 10th St. & Deer Park Blvd., Omaha, NE 68107

KANSAS - Gretchen Ziegler, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606

KENTUCKY - Thomas Benner, Toledo Zoo, 2700 Broadway, Toledo, OH 43609

LOUISIANA - Michelle Asselin, Audubon Park & Zoological Gardens, P.O. Box 4327, New Orleans, LA 70115

MAINE - Jeanette Nadeau (see addresses under CT)

MARYLAND - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA

MASSACHUSETTS - Jeanette Nadeau (see addresses under CT)

MICHIGAN - Dan Powell, Potawatomi Zoo, 500 S. Greenlawn, South Bend, IN 46615

MINNESOTA - Tim Hill, Minnesota Zoological Gardens, 13000 Zoo Blvd., Apple Valley, MN 55124

MISSISSIPPI - Jeannie Frazier, Jackson Zoological Park, 2918 W. Capitol, Jackson, MS 39209

MISSOURI - Vacancy

MONTANA - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103

NEBRASKA - Carla Wieser (see address under Iowa)

NEVADA - Vacancy

NEW HAMPSHIRE - Jeanette Nadeau (see addresses under CT)

NEW JERSEY - Theresa Maas, Philadelphia Zoo, 34th & Girard Ave., Philadelphia, PA 19104

NEW MEXICO - Bruce Eneboe, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716

EAST NEW YORK - Mark Hofling, Bronx Zoo, 185th & Southern Blvd., Bronx, NY 10460 (212) 220-7115 [w]

WEST NEW YORK - Alan Baker, Burnet Park Zoo, 500 Burnet Park Dr., Syracuse, NY 13204

NORTH CAROLINA - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

NORTH DAKOTA - Bob Debets, Assiniboine Park Zoo, 2355 Corydon Ave., Winnipeg, Manitoba
Canada R3P 0R5 (204) 986-4040 [w]

OHIO - Thomas Benner, Toledo Zoo, 2700 Broadway, Toledo, OH 43609

OKLAHOMA - Debbie Jackson or Ann Rademacher (see addresses under AR)

OREGON - Anna Michel, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR 97221

PENNSYLVANIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

RHODE ISLAND - Jeanette Nadeau (see addresses under CT)

SOUTH CAROLINA - Lucy Segerson, North Carolina Zoo, Rt. 4, Box 83, Asheboro, NC 27203

SOUTH DAKOTA - Bob Debets (see address under ND)

TENNESSEE - Gail Karr or Cindy Pinger, Memphis Zoo & Aquarium, 2000 Galloway, Memphis, TN 38112

TEXAS - Ann Marie Greco, San Antonio Zoo, 3903 N. St. Mary's St., San Antonio, TX 78212

UTAH - John Turner, Denver Zoo, City Park, Denver, CO 800205

VERMONT - Jeanette Nadeau (see addresses under CT)

VIRGINIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

WASHINGTON - Elandra Aum, Woodland Park Zoo, 5500 Phinney Ave. N, Seattle, WA 98103

WEST VIRGINIA - Theresa Maas, Philadelphia Zoo, 34th & Girard, Philadelphia, PA 19104

WISCONSIN - Wayne Hazlett, 3768 S. 89th St., Milwaukee, WI 53228

WYOMING - Mark Konop, Zoo Montana, P.O. Box 955, Billings, MT 59103

DISTRICT OF COLUMBIA - Theresa Maas (see address under PA)

Province of Ontario - Neil Porter, Metro Toronto Zoo, Box 280, West Hill, Ontario M1E 4R5 Canada

Provinces of Manitoba & Saskatchewan - Bob Debets (see address under ND)

Province of Quebec - Chantal Routhier, Granby Zoo, 347 Rue Bourget, Granby, Quebec, Canada J2G 1E 8

Provinces of Alberta & British Columbia - Vacancy

Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 15th of each month to: Opportunity Knocks/AKE, 635 Gage Blvd., Topeka, KS 66606. Please include closing dates for positions available. There is no charge for this service and phone-in listings of positions which become available close to deadline are accepted. Our phone is 1-800-242-4519 (U.S.); 1-800-468-1966 (Canada). Our FAX is 913-272-2539.

CURATOR OF THE ANIMAL ENCOUNTERS AREA...requires administrative/supervisory/interpersonal skills and ability to function as a team player. Experience with domestic animals in a zoo setting including training and interactive program development necessary. Resume by **30 January 1992** to: Richard M. Hurst, Director of Human Resources, Indianapolis Zoo, 1200 We. Washington St., Indianapolis, IN 46222.

ZOOKEEPER...zoo expansion has created an immediate opening for another full-time keeper with some paid zoo experience and a strong desire to learn. Besides routine animal care of mammals, birds and reptiles, applicant will handle small animals while giving scheduled talks to the public. Special interest in reptiles is a plus. Send resume with salary requirements to: Vince Hall, Claws n' Paws Wild Animal Park, RD 16, Lake Ariel, PA 18436.

KEEPER/Mammal Dept....preference will be given to applicants with a high school education who can demonstrate a basic knowledge of mammal care functions. Duties will include daily animal care, health and behavior observations, and interaction with the public. Salary \$14,628 plus excellent benefits. Send resume by **31 December 1991** to: City of Fort Worth-Personnel Department, 1000 Throckmorton Street, Fort Worth, TX 76102, Attn: Diane Roberts.

ASSOCIATE ZOO CURATOR...requires associate degree in Zoology/Biology and 2 year's progressively responsible experience in zoo management or an equivalent combination of education and experience. Works under general supervision of Zoo Superintendent. Responsible for supervising full time and seasonal employees in all aspects of the care and maintenance of the animal collection including primates, carnivores, hoof stock and birds. Will assist in the development of education programs and new exhibits. Submit resume by **31 December 1991** to: City of Idaho Falls Personnel Office, P.O. Box 50220, Idaho Falls, ID 83405. EOE.

ANIMAL KEEPER...successful candidate will be working as a member of an elephant management team implementing the elephant management guidelines recently adopted by AAZPA. Responsible for daily animal care, extensive record keeping, and visitor education duties. College level course work is desirable. Annual salary \$22,292-\$26,705 plus benefits. Obtain application form and supplemental requirements from the Metropolitan Service District, Personnel Office. 2000 S.W. First Ave., Portland, OR 97201. (503) 221-1646. **No resumes.** EOE. Completed applications must be received by **31 December 1991**.

The following two (2) positions are open at the Philadelphia Zoo. Send resume/letter to: Philadelphia Zoo, 3400 Girard Ave., Philadelphia, PA 19104.

KEEPER...requires high school diploma/equivalent and two year's experience with captive exotics of biology/zoology degree and one year's experience. Duties include daily care, feeding, food preparation and exhibit maintenance for a variety of animal areas as assigned.

KEEPER/BIRDS...requires high school diploma/equivalent and two year's experience with captive exotics with an emphasis on birds or biology/zoology degree and one year's experience.



AAZK Membership Application

Name _____ check here if renewal []

Address _____

City _____ State/Province _____ Zip _____

☐ **\$30.00 Professional**
Full-time Keepers

☐ **\$25.00 Affiliate**
Other staff & volunteers

☐ **\$25.00 Associate**
*Those not connected with
an animal facility*

☐ **\$40.00 International**
*All members outside U.S. & Canada
regardless of category*

☐ **\$20.00 Library**
Library subscription only

☐ **\$50.00 or up Contributing or Institutional**
Individuals & Organizations

Zoo Affiliation (if any) _____

Zoo Address _____

Mail this application and check or money order (U.S. CURRENCY ONLY PLEASE), made payable to American Association of Zoo Keepers, Inc., to : AAZK Administrative Offices, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606 U.S.A.

Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration.

Articles should be typed or hand-printed and double-spaced. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size **no greater than 6" x 10"** (15cm x 25 1/2cm). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific name of species (as per ISIS) the first time it is used. Thereafter use common name. Black and white photos only accepted.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope. Telephone or FAX contributions of late-breaking news or last-minute insertions are accepted. However, long articles must be sent by U.S. mail. The phone number is (913) 272-5821 Ext. 31. FAX # is 913-272-2539.

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of Zoo Keepers, Inc.
635 Gage Blvd.
Topeka, KS 66606

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